The Iron Age

A Review of the Hardware and Metal Trades.

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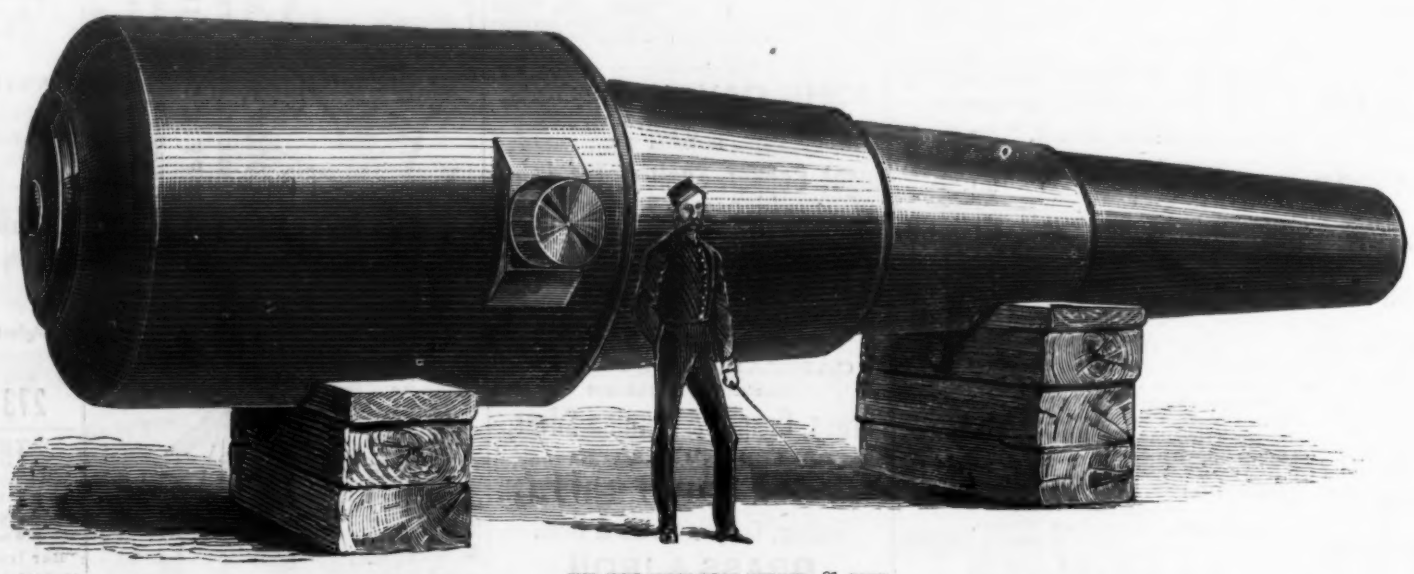
British and American Artillery.

The heaviest gun now actually in position, commonly called the Woolwich Infant, is 15 ft. 3 in. long, and weighs 35 tons; the new gun which is now being made at Woolwich Arsenal, and of which we publish an engraving, will be 27 ft. long, and will weigh 81 tons. The depth at breech is 6 ft., and the calibre 14 inches, to be increased afterward, if advisable, to 16 inches, and the length of bore 24 ft. The gun is a series of four intended for the future armament of the Inflexible. For the purpose of avoiding accidents in lifting this monster gun, a movable button, in lieu of a cascade loop, has been introduced, which will not interfere with the working of the gun within its turret, but which can be screwed out and its place supplied by a powerful shackle whenever the gun has to be transported. In the engraving the breech appears with the button screwed in. A special crane will be provided for lifting the gun at the arsenal, and the bridges leading to the proof butts in Plumstead Marshes are being strengthened. The projectile fired from this gun will weigh from 1000 to 1200 pounds, propelled by about one-sixth that weight of powder. As compared with the Woolwich Infant the force of the blows struck at a range of 3000 yards would be severally 8387 and 10,065 foot-tons. With the Palliser chilled shot the new gun is expected to have a piercing capacity of some 19 or 20 inches of armor plate. The construction of the gun is similar to that of other heavy guns, excepting the extra coil in the chase.



THE NEW WOOLWICH INFANT—81 TONS.

The Rodman gun, called after its inventor, was in use before the United States civil war. For some years the Americans and English maintained a controversy as to the relative value of heavy smooth bore and rifled ordnance. We, like the English, have found that smooth bore guns cast in the usual manner—*i. e.*, in a solid block of metal, the interior being subsequently bored—were extremely liable to burst. Accordingly Mr. Rodman invented a new system of casting them by inserting in the mold a hollow tube the size of the needed bore, and letting the liquid metal flow round it. Through the tube was maintained a constant stream of cold water. By this the interior of the gun became cold first, instead of last, and was thus made more hard and durable. It fires, of course, round shot at a comparatively low velocity, and carries from 4000 to 5000 yards.

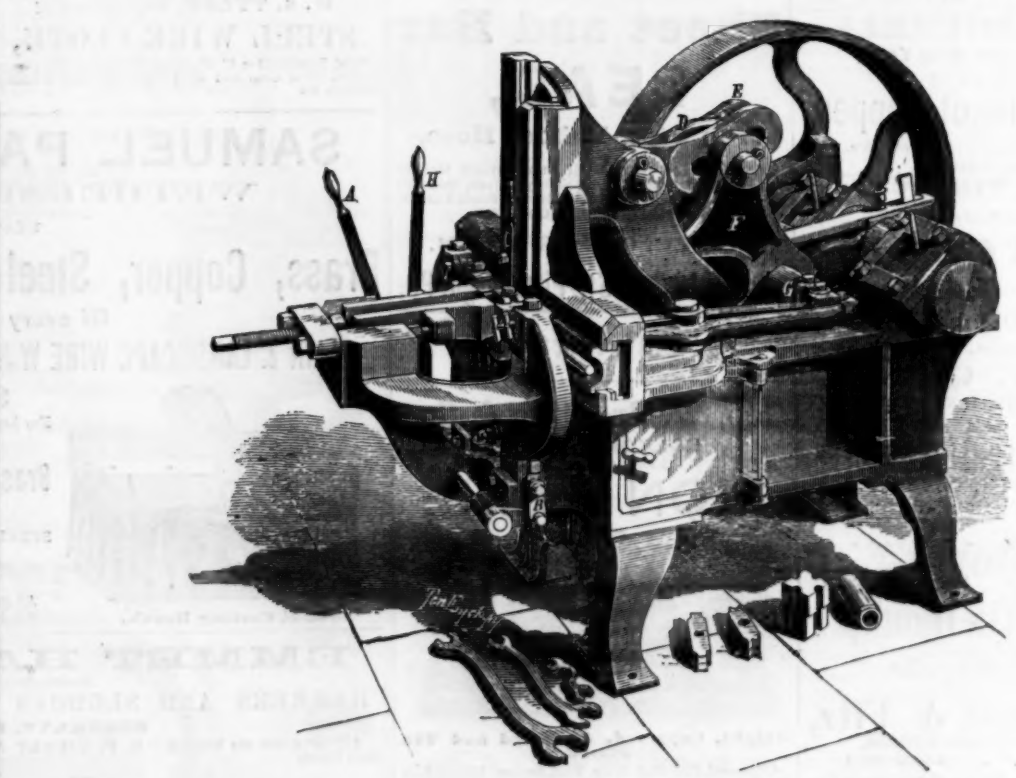
Abbe's Bolt Forging Machine.

It has long been conceded that, in forging bolts, the four or six sides of the head should be acted upon by the forging dies without moving the bolt plank from the position in which it is held, and that the forging dies should be wider than the bolt head, so as to leave no fins on the corners of the head. The object of the inventor of the machine shown in the accompanying illustration, has been to produce a tool which should combine these advantages with all the requirements of every class of bolt forging. Four dies are used, and the bolt is held firmly and securely in one position until finished, always, it is claimed, producing a bolt, under the head, just the size of the rod, with the sides of the head in parallel lines with the body. All classes of bolts and shapes of head desired are made, especially the fish joint or T headed bolts, which, we are informed, cannot be made on machines where the bolt is turned to receive the action of the forging dies. The production of the apparatus varies, with the size of the bolt to be forged, from eight to sixteen perfect bolts per minute, and changing from one size of bolt to another, or from one shape of head to another, it is stated, requires hardly a moment's time, especially adapting the device to the use of railway shops.

Among the points of advantage claimed are, first, simplicity; every bolt and joint being dispensed with, except those which produce the result of working the four dies, while there are neither gears, cams nor springs about the machine, thus saving to the user both the expense and the time occupied in making necessary repairs. The slides are all gibbed, so that any trifling wear can be readily taken up, without removing the slides, to put on a thin strip of iron. The sliding surfaces are always running on oil, as they are placed above the water and cinders. The machine is provided with a cupboard for its tools, a new feature in this class of devices.

The holding vise is operated by the handle, A, attached to the shaft. On each end of the latter are the arms, having links, B, attached, to work the dies. These holders are backed up by a filling-in piece, adjusted forward by means of the screws. The handle of the bolt is gaged from one inch upward by adjusting the end screw. The driving wheel is in operation all the time—the machine only when it is forging bolts. The long slide carries the bottom die on its lower end. The top slide die, C, works on the face of the long slide, which is actuated by two levers, D, E, having curved slots, the top die slide having one lever with reverse curve, all working on the same pin. The pin in the opposite carrier, F, passes from the curved slots, and, as it acts back and forth, moves them in opposite directions. The slide dies have their motion by means of links, G, attached to the opposite carrier.

When the bolt plank is placed in the holders and clamped tightly by means of the handle, A, the handle, H, clutches in the driving wheel with the shaft, the opposite carrier advances by means of the connections to upset the iron, the forging dies being all open. As the opposite carrier recedes to half stroke, the slide dies compress the sides of the head, and at the end of the stroke the top and bottom dies act upon the other two sides of the head, and so continue to do until the bolt is finished, which is done in four revolutions of the driving wheel.



ABBE'S BOLT FORGING MACHINE.

Two sizes of these machines are being manufactured, one for both large and small bolts, and the other more particularly for the smaller sizes. Two patents have been granted for this header, bearing date of May 1, 1870, and June 6, 1871, respectively.

For further particulars address the inventor, John R. Abbe, or the manufacturer, S. C. Forsaith & Co., Manchester, N. H., at whose works the machines can always be seen in practical operation.

The Ponsard Gas Furnace.

From a paper lately read before the Paris Society of Civil Engineers, by M. Perisse:

The furnace consists essentially: (1) Of a gasogene, in which the fuel in a solid state undergoes incomplete combustion or is transformed into gases which are themselves combustible; (2) of a hot air apparatus, heated by the lost flames, called by its inventor a heat recuperator, and placed below the furnace proper; (3) of what is called a furnace laboratory, in which the gases from the gasogene are submitted to complete combustion by means of the hot air from the recuperator. There are two forms of gasogenes, one fed with hot and the other with cold air. The principal applications which have been made at present of this system of heating are: the heating and welding of iron, the fusion of steel and cast iron, the reheating of steel, puddling of iron, treatment direct of ores of iron and of zinc; glass bottle, gas and chemical manufactures; and the heating of steam boilers. The first of these applications was dwelt on specially, and the results obtained with five such furnaces were detailed:

A furnace at the Basacle forge, at Toulouse, belonging to M. Pelegreg. This apparatus was described as having been in work for two years, producing an economy of 50 per cent in fuel, and a saving of one-third or one-quarter of the whole. It produces of itself 30 per cent. more than two ordinary furnaces. A reheating furnace at the works of M. Devax-Ibled, at Vieux Conde, in the department of the Nord, which had been at work for fifteen months without undergoing material repairs; with the ordinary furnaces two cwt. of nuts require 115 kilos of coal for their manufacture, but with the Ponsard furnace 53 kilos only. The saving in waste is estimated at about one-half. Three furnaces in Italy fed with lignite; two of these are at San Giovanni, in the valley of the Aras, with two puddling furnaces and three boilers, in all seven apparatus, heated by the same system; the other is at the small works at Mamianno, in the Appenines. The weight of the lignite consumed in the production of a ton of iron is about the same as that of coal in French furnaces. The application of this inferior fuel is an important fact.

M. Perisse then took up the purely scientific question arising out of the subject. In the first place he showed what was the composition of the gases produced by the gasogenes from coal, coke, charcoal, lignite, peat, &c. Taking the analysis and experiments of Berthelot as his starting ground, he showed that the gas produced by the incomplete combustion of coal contained not only carbonic oxide, carbonic acid and nitrogen, but also a strong dose of hydrogen mixed with acetyline and other gaseous hydro-carburets.

M. Perisse comparing the quantities of heat lost and utilized in the gas furnaces of Siemens and Ponsard, claims for the latter a superiority over the former amounting to 5 or 6 per cent. in the economy of fuel when the ordinary gasogene is used, and from 10 to 13 per cent. when the gas is produced by means of the hot blast from the recuperator. And in addition to this, the Ponsard furnace costs less than half as much as the Siemens'. Another economy in these gas furnaces is the saving of about forty shillings a day in the saving of waste iron.

The subject is summed in the following terms: With the Siemens or Ponsard gas-furnaces higher temperatures are obtained with regularity than with other furnaces. The causes of their superiority consist in the fact that the fuel and the metal are in the same physical condition, their initial temperature, the possibility of mixing them in the proper theoretical proportions without admitting any notable excess of air, the possibility also of making such combination at the very point where it is required, and that at a light pressure which preserves the laboratory of the furnace, and the matters contained in it from the chills and alterations caused by the entrance of the outer air.

The rapidity of heating depends evidently on the excess of the temperature of the flames as compared with the temperature to which the substances must be raised, so that in these gas-furnaces we have at once a larger production with an important economy in fuel, independently of that which results from recuperation.

Still, the full effects of high temperatures have not yet been obtained, and can only be so when a high pressure can be maintained in the laboratory of a gas-furnace constructed of sufficiently refractory materials. A continuous struggle is going on between the fire, whose most violent manifestations are excited, and the refractory material adopted to contain and master it.

Cost of Living.—A comparison of the prices of the staples of the country in wholesale markets in November, 1859, 1864 and 1874, shows that prices are nearly as low, and in some cases lower now than before the war, if they are reduced to the gold standard. Wheat is selling at about the same prices in currency as it sold for in gold in 1859. Corn is selling for half what it did in 1864 (the year when gold touched 285), and about the same price, gold values, as it did in 1859. Cotton is worth a little more than in 1859, but is about one-ninth the price reached in 1864. Provisions, sugar and coffee show a heavy decline, but the present currency quotations are above the gold prices of 1859. Dry goods show a great decline since 1864, prints being below the prices of 1859. Beef was rather higher, in the local market, before the war than to-day. Sales were reported in the *Ledger* in November, 1859, for 7 to 9 cents per pound. The corresponding cattle market report published this year quotes sales at from 4 to 7¼ cents. But before these articles reach the consumers items of cost are added to them, which have not been reduced in proportion to the reduction in prime cost. The tax rate of 1859 on real estate was $1·75 on a very low valuation of property; to-day it is $2·20 on a cash valuation. A house which was worth $1500 in 1859 could not be bought for twice that amount now, and rents are from two to three times as high now as before the war. While it is true, therefore, that what are often called the "necessaries of life" have been reduced in price at wholesale to nearly the prices which ruled in 1859, it is not to be inferred that the cost of living to working men has been correspondingly reduced. Provisions consume about one-third to one half working men's incomes. The other half is expended for rent, clothing, fuel, lights, and other expenditures of all kinds, and in many of these there has been no reduction from ante-war prices. But with a reduction in the prime cost of provisions there will, undoubtedly, come in time a reduction in the value of the things for which corn, beef, wheat, &c., are exchanged, in other words, a reduction in all the many things which together make up the real cost of living.—*Philadelphia Ledger.*

A New Shell.—Various experiments have been made by the committee on explosives, with a view of ascertaining the practical effect of Professor Abel's proposed plan for the bursting of common shells filled with water, by means of a detonator, consisting of dry compressed gun-cotton enveloping a small cap of fulminate of mercury. Some months ago the practicability of exploding 16-pounder common shells in this manner was satisfactorily established, and the result of such an arrangement was the bursting of a shell into 300 fragments, whereas only about thirty pieces were produced by the explosion of an ordinary bursting charge of gunpowder. The effect of such an explosion among troops in the field could not be otherwise than disastrous in the extreme. Lately, however, experiments have been made with 9-inch common shells, which far exceed in effect that of any conducted with the field service common shell. On this occasion the bursting element employed was wet gun-cotton in lieu of water. The projectiles being then filled with some eight or nine pounds of wet compressed gun-cotton, and a "detonator," as described above, having been fitted into the fuse-hole socket, they were fired by an ordinary electric fuse. The result was extraordinary, the shells bursting literally into thousands of pieces.

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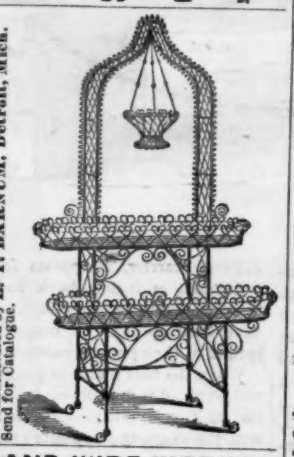

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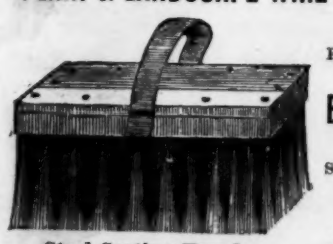

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Analysis of Potable Water.

In examining water for sanitary purposes the following are the principal points to be observed and determined:

1. Total solid residue.
2. Hardness, temporary and permanent.
3. Chlorine.
4. Nitrogen in nitrates and nitrites.
5. Ammonia and organic matter.
6. Metals.

The first is easily determined by evaporating a given quantity, say 3 ounces, on a water bath to dryness, and drying the residue in an air bath at 266° F. The total operation, according to Wanklyn and Chapman, requires about an hour and a quarter.

By the hardness of water is meant the quantity of soap it will destroy before a lather is formed. Although hard water is not generally considered unwholesome, it is quite unsuited for general domestic use, and especially so for feeding steam boilers. There are several methods of determining hardness, the simplest of which consists in preparing an alcoholic soap solution, of which a given quantity is just capable of neutralizing one gramme of carbonate of lime. To do this the following steps are taken: A weighed quantity of pure fused chloride of calcium is dissolved in such a quantity of distilled water, that one litre of the solution shall contain exactly 1·110 grammes of chloride of calcium, which is equivalent to 1 gramme carbonate of lime. A good quality of hard white soap, or a potash soap formed by pounding together two parts lead plaister and one part carbonate of potash, is dissolved in strong alcohol, allowed to settle and filtered. To standardize this, add an equal volume of water, then measure out 17 cubic centimeters of the solution and add to it 70 c. c. pure water. The standard solution of chloride of calcium above described is added to this from a graduated pipette until, on shaking, the frothing stops. If more than 16 c. c. of chloride of calcium is required, dilute the soap solution with enough 40 per cent. alcohol to make 17 c. c. of standard soap solution accurately, neutralize 16 c. c. of standard chloride of calcium solution in the presence of 70 c. c. of pure water. When it is required to determine the total hardness of any natural water it is only necessary to place 70 c. c. of the water in a glass stopped bottle, and add just enough of the standard soap solution to produce, on shaking, a permanent lather. The number of cubic centimeters of soap solution consumed indicates the number of grains of carbonate of lime, or its equivalent, in one gallon of water. Tested in this way, Croton water requires from 2 c. c. to 2·35 c. c. of soap solution, showing a hardness of 2 to 2·35 grains carbonate of lime per gallon. Sometimes the hardness of water is expressed in degrees, but this is objectionable, as the degrees used in different countries and by different chemists are not the same.

The determination of the permanent hardness is made as above after boiling the water for an hour, distilled water being added to replace that which evaporates. The difference between total and permanent hardness is equal to the temporary hardness.

Chlorine is usually determined volumetrically by means of a standard solution of nitrate of silver, and requires some skill and experience to insure accuracy. If 0·479 grammes nitrate of silver be dissolved in 1 litre distilled water, 1 c. c. of the solution will precipitate 0·1 milligramme of chlorine. About half a milligramme of neutral chromate of potash in solution is added to a measured quantity of the water to be tested, and the standard silver solution added, drop by drop, until a permanent red color begins to form. Water which contains a large quantity of chlorine may have derived part of it from sewage.

Nitrates and nitrites are not so easily determined as the above, and no method now in use would prove of any value to a person not a skilled chemist. The presence of even small quantities of nitrites is objectionable, and for these the following qualitative test will suffice: To 100 or 200 c. c. of the water to be tested are added 2 c. c. of dilute sulphuric acid, and then some freshly prepared starch paste containing iodide of potassium. If a blue color is at once produced nitrous acid or some nitrate is present. Nitric acid may be detected by adding to 25 c. c. of the water, 50 c. c. of pure concentrated sulphuric acid, 60° B., and, while still very warm, allowing a very dilute solution of indigo to drop into it. If the color of the indigo disappears immediately, even when repeatedly added, the water may be considered suspicious, if not dangerous.

Ammonia and organic matter are especially objectionable in potable water, and their quantitative determination is as important as it is difficult. The Nessler test is a very delicate one for ammonia, as it will detect one part of ammonia in 20,000,000 parts of water. Ammonia may be concentrated by distillation, for if 2 litres of water be distilled, nearly all the ammonia contained in it will pass into the first 100 c. c. of distillate, thus rendering our test ten times more delicate than before. The Nessler reagent is made by dissolving 50 grammes iodide of potassium in a small quantity of hot distilled water, and adding to it, while on a water bath, a solution of corrosive sublimate until the red precipitate no longer dissolves; filter and add 150 grammes of solid caustic soda, or 200 grammes solid potash, dissolved in water; dilute to one litre, and add 5 c. c. of saturated solution of corrosive sublimate; allow to subside and decant the clear liquid. It gives a brown color with ammonia.

In using the Nessler test for quantitative determination, 1½ c. c. of the reagent is added to 100 c. c. of the water to be examined, and the color observed. The same quantity of reagent is added to a given quantity of a standard solution of ammonia also diluted to 100 c. c., and the colors compared. The standard ammonia solution is made by dissolving 0·03882 grammes sulphate of ammonia, or 0·0315 grammes chloride of ammonium in a litre of water.

The presence of any considerable quantity of ammonia is almost certain proof of sewage contamination, as urea is readily convertible into carbonate of ammonia.

Of the metals, lead is the most dangerous, and if lead pipes are employed, is most generally present. The water to be tested should be concentrated by evaporation, acidified with nitric acid, and tested with sulphureted hydrogen gas. A dark brown or black color indicates lead or copper, usually the former.

These facts, prepared expressly for *The Iron Age*, will be of interest to a large number of our readers, and will give in form convenient for reference, much information which we have often been asked to give by letter.

The Quinnimont Furnace.

The new furnace at Quinnimont, Fayette county, West Virginia, on the line of the Chesapeake and Ohio Railroad, was commenced about May, 1873, with the view of proving, among other things, whether iron could be made with the cheapness and of the excellent quality which the friends of that road and the surrounding mineral district asserted was the case. A correspondent of the *Coal Trade Journal* describes it as follows:

The furnace is owned and operated by the New River Car Company, and is situated close to New River and C. & O. R. R., at the mouth of a creek whose debouchment affords a sufficient area of bottom land. It is near the eastern limit of the third and lower or New River series of the Kanawha coal basin. The furnace has been about a month in blast, and although the appliances are not yet what they are capable of being made, still they are very pregnant with interest and suggestion.

The furnace has a 60x15 feet stack, built of a free, gray sandstone, quarried close by, and lined with Sciotoville, Ohio, brick. The railroad cars with ore and limestone run on an elevated track into the stock house. A road about one mile in length, extends up the creek to the foot of the coal incline, where the coke ovens, constructed on the beehive pattern to suit the local labor and necessities, are situated. These are of Sciotoville brick, cased in the usual manner with loose rock, earth, and outside walls. There are 60 ovens.

The coal incline is 900 feet in perpendicular hight, and 2500 in length; passing three or four ascertained seams of bituminous coal, it extends to the highest but one upon that part of the mountain, which is the one at present worked, having been chosen for its valuable coking properties.

Analysis by J. B. Britton, of Philadelphia, gives the following results:

QUINNIMONT COAL.

Moisture		·94
Volatile combustible matter	including	18·19
Fixed carbon	Sulphur.	75·89
Ash	0·30	4·98
		100·00

COKE—FROM MINE SLACK.

Water and volatile combustible matter	2·71
Ash	5·57
Carbon	91·72
	100·00
Sulphur in the above	·48
Phosphoric acid	a trace.

COKE—FROM RUN OF MINE.

From the raw coal		80·87 of coke.
Carbon.	including	93·85
Ash	Sulphur 0·30	6·15
		100·00

Apparently the coal is of nearly the same hardness as the Connellsville, of Pennsylvania, with a tendency to harden as the work progresses. It has a small cubical fracture, and a fat, lustrous appearance. In the grate it burns with a red and cheerful glow, but not much flame, leaves very little red ash, and a small amount of cinder.

The New River Car Co. is mining about 4000 tons per month of this coal, chiefly for their own coke ovens and furnace use; but as orders are far in advance of the supply, they propose to increase their output to 400 tons per day. The seam was opened near the mouth of the creek, but in consequence of penetrating a spur of the mountain, difficulties were encountered in the way of undulations, etc., which decrease as the mountain is penetrated, while the seam increases in thickness from under five feet to six feet. The expense of mining and putting coal upon the cars is 80 to 95 cents per ton, according to position of coal. The coal is also brought eastward, and used for blacksmithery or household purposes, also by steamboats.

The company's rule is to use the fine slack of the mine as far as possible, in making coke for iron.

The hematite ores hitherto have been used raw, but preparations are now made, henceforward, for roasting, and a portion of the ore used will be treated in this way. At present there are two runs daily, of about ten tons each, which will be doubled when the machinery has its full development. The furnace records show that foundry and gray forge iron of fine quality has already been made with a ton and three-tenths of coke, made altogether from the slack of the mine.

Regarding cost of iron at the furnace, I am enabled to state positively that including the the interest on investment, and without reckoning the profit from the company's store, it is already materially under twenty dollars per ton of pig iron.

Experience in this section convinces me that one cause of its slow development lies in the fact that the great majority of men who have undertaken to develop the resources of this district, dazzled by its manifest riches, have embarked more or less inconsiderately, and consequently reaped more or less of failure as a reward. I venture the expression that this Quinnimont enterprise should command a degree of interest and attention that would extend beyond the line of the C. & O. Railroad, controlled and managed as it is by practical men.

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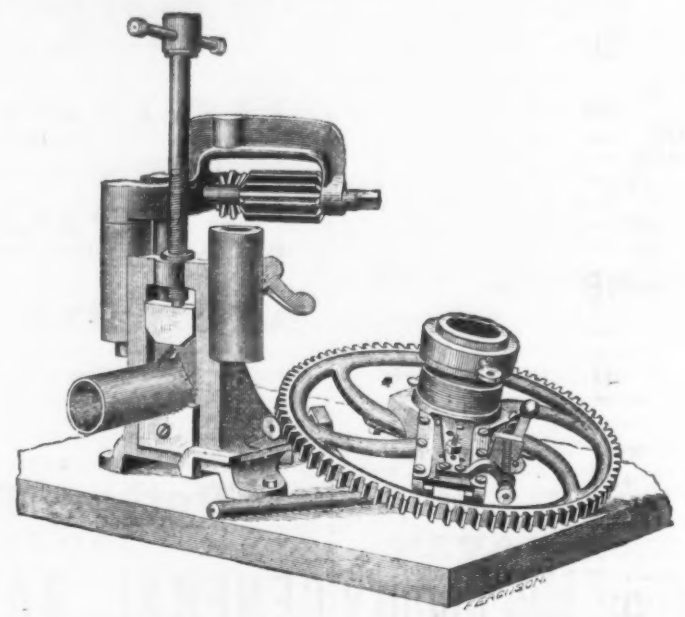
The C. W. Roberts Pipe Cutting and Threading Machine and Vise.

We present herewith two illustrations of an improved pipe cutter and threader manufactured under C. W. Roberts's patents, by Messrs. N. W. Frost & Co., of Cohoes, N. Y. Fig. 1 represents the machine as taken apart to be used for a vise. If necessary, the small gear, which is still attached, can be slipped off entirely, leaving nothing but the vise. Fig. 2 represents the machine ready for operation as a pipe cutter and threader. This machine has many features of practical excellence which commend it to the favor of the trade. In construction it is simple and easily understood, and is not liable to disarrangement. It can be slipped apart in three pieces, and carried without difficulty from place to place where it is to be used. It can be set in any desired position, being as well adapted to bolting to a post as to a bench; and one piece, easily detached, forms an excellent



PIPE CUTTING AND THREADING MACHINE AND VISE.—*Fig.* 1.

vise for screwing fittings on or off, or doing other work for which a pipe fitter uses a vise. It is "labor saving" in a marked degree, and with it one man can do as much work as three could do without it. The cutter which is attached to this machine is automatic in its operation, and is a very simple and effective arrangement, cutting a pipe off clean and leaving no burr. Its weight, complete, is only 85 pounds. It is one of the simplest and best machines of the kind we have ever seen, and its cheapness further commends it to favor.

Enameling Cast Iron.

After heating cast iron articles to a red heat in sand, and keeping them thus for half an hour, they are allowed to cool slowly, and are then carefully cleaned with hot diluted sulphuric or hydrochloric acid, rinsed with water and dried. A ground is then laid on by coating them with the following mixture, consisting of six parts of flint glass, three of borax, one of minium, one of oxide of zinc, mixed and finely pulverized, and heated for four hours up to a red heat, and finally rendered semi-fluid by increase of temperature; the mass is then quickly quenched in cold water, and one part of it is mixed with two parts of bone meal, and formed into a pap by triturating finely with sufficient water. Upon this, when dry, the two following mixtures, prepared like the first, are then laid in succession, the first of 32 parts of calcined bones, 16 of kaolin, 14 of felspar, four of potash stirred up with water, dried, calcined, and suddenly cooled in water, and the powdered mass triturated with water to a fine paste with 16 parts of flint glass, five and a half of calcined bones, and three of calcined quartz; after this has been laid on and well dried, a second coating is laid on of four parts of felspar, four of pure sand, four of potash, six of borax, one of oxide of zinc, one of saltpeter, one of white arsenic, and one of the best chalk; these ingredients are mixed, calcined, suddenly cooled in water, and triturated with five and a half parts of calcined bones, and three of quartz. The coated article is finally heated in a muffle in a furnace similar to a porcelain furnace, when both coatings fuse and mix, thus forming a very adhesive, white and brilliant enamel.

Projection of Electric Light.

Important and highly interesting experiments have been made at the Alliance Works, Passy, near Paris, in the projection of electric light for military purposes, such as the illumination of an enemy's works, but which has a general interest as being applicable to industrial and scientific purposes. During the war of 1870-1 electric posts were established in Montmartre and in the forts around Paris; these apparatus were not of great power, but they proved their utility on more than one occasion. An instance may be quoted: A German force was noticed on the opposite bank of the Seine, near Courbevoir, preparing to cross the river in boats, the electric light was directed from Montmartre, and all the guns that commanded the spot opened fire immediately, and the enemy were utterly routed. The Russian Government, struck with the importance of powerful electric lights in time of war, determined on providing them for all its forts and strong places, and applied to the company in question. The apparatus tried recently at Passy, in the presence of two Russian commissioners, a Russian admiral, and several scientific men, consisted of a cast iron tube about 47 in. or 48 in. in diameter, and 3 ft. long, one end being closed by a lens 45 in. in diameter, while the other was fitted with a copper cover supporting the reflector composed of glass like that of a lighthouse. The cover was pierced by two holes, like a stereoscope, to enable the observer to regulate the light. The two electric charcoal points were, of course, placed within the tube, and the distance between them was regulated by clock-work, but which allowed of the increase or diminution of the amount of light. The light was found to be effective to a distance of about ten miles, and a telescope fixed at the side of the apparatus enabled the observer to reconnoitre all the points included in the luminous cone. Other experiments have been made, and with very satisfactory results. One application which suggests itself of such an apparatus is the saving of life in case of shipwreck, as a light of that power would enable those on shore to ascertain exactly the condition of the vessel in danger. But the value of such a means of illumination requires no illustration.

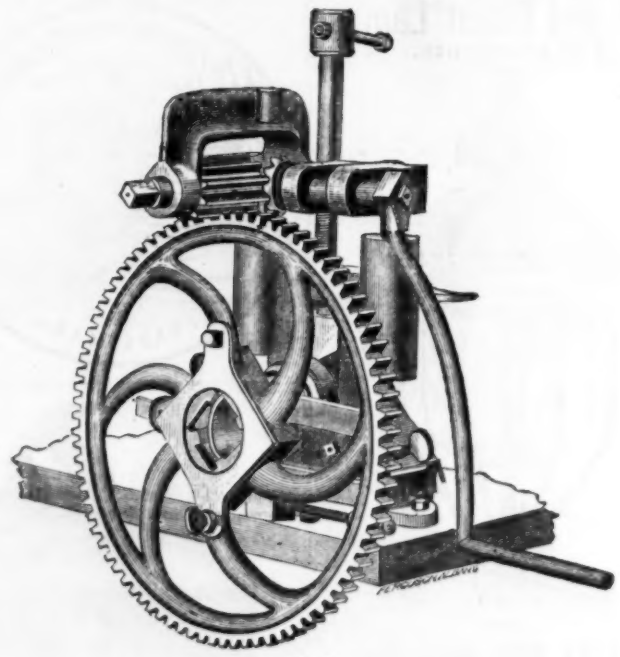


Fig. 2.

Polishing Brass.—Young engineers will find the following recipe a good one for polishing the brass work of their engines. Rub the surface of the metal with rottenstone and sweet-oil, then rub off with a piece of cotton flannel and polish with soft leather. A solution of oxalic acid rubbed over tarnished brass soon removes the tarnish, rendering the metal bright. The acid must be washed off with water, and the brass rubbed with whiting and soft leather. A mixture of muriatic acid and alum dissolved in water imparts a golden color to brass articles that are steeped in it for a few seconds.

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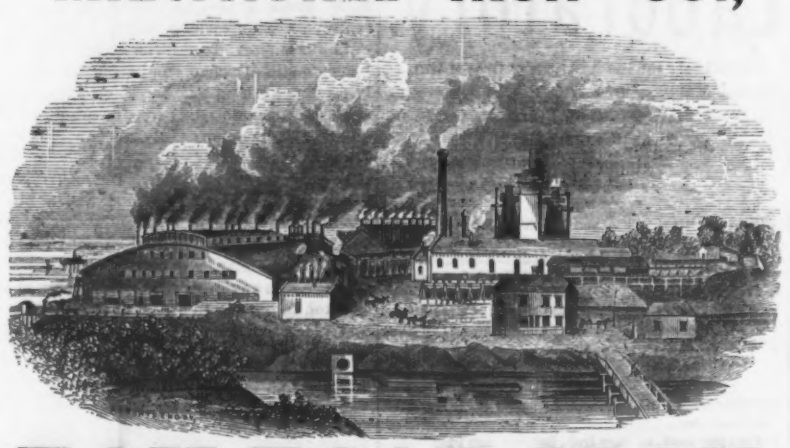

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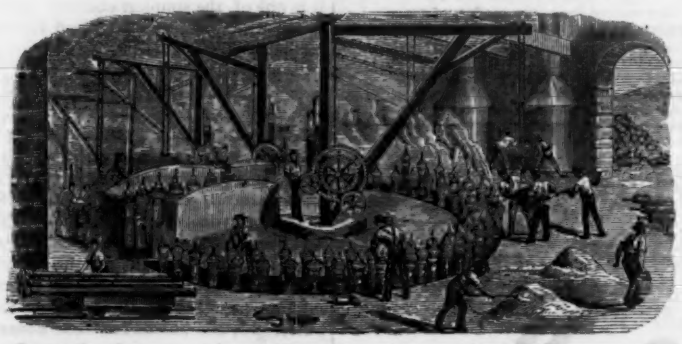

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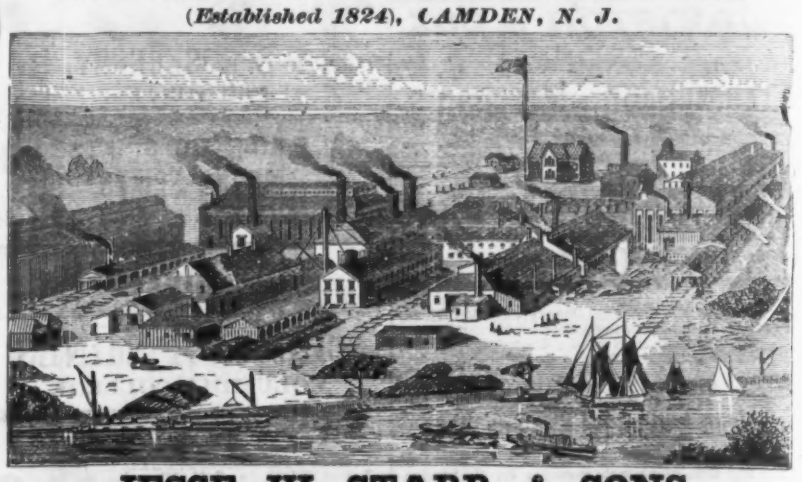

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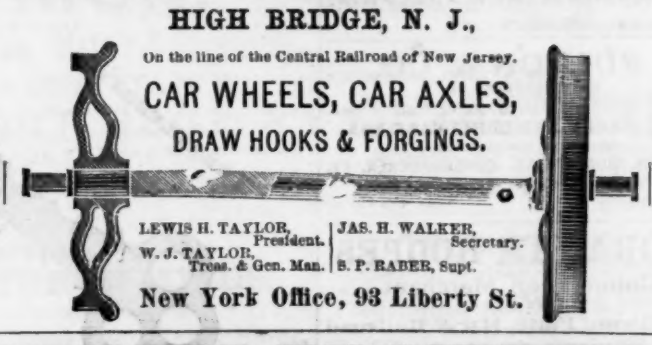

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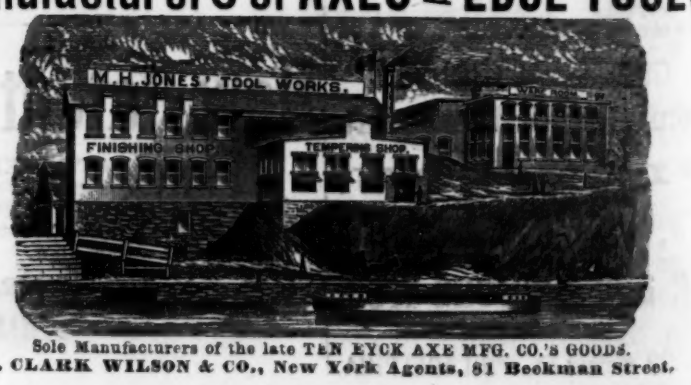

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Progress in Applied Chemistry.

In a presidential address recently delivered to the Chemical section of the Philosophical Society of Glasgow, Mr. E. C. C. Stanford, F. C. S., said: It is remarkable how little we know, chemically, of the air we breathe, the soil we live upon, the water we drink, and the food we eat. The chemistry of hygiene is quite in its infancy. Pettinkoper avers that in all really healthy houses we virtually live out of doors, the walls being largely pervious to air; and he shows that where these walls are saturated with water they become impervious to air, and therefore unhealthy. It has been found that to keep the air pure in houses, a ventilation is necessary of more than 2100 cubic feet per head per hour. Pettinkoper shows that most of the ventilation of a room is through the walls, and we are apt to forget how extremely porous to gases these septa generally are. He reckons the average rate per square yard at about 7 cubic feet, or 43 gallons per hour. He employs carbonic acid measurements in these researches, and the large wall-ventilation shows that smaller houses have more ventilation in proportion to their size than larger ones. In earth hovels the ventilation is about double the average rate. Turning to the water we drink, there is still, unfortunately, great difference of opinion as to the proper composition of good drinking water. The term "previous sewage contamination," which has been introduced, is misleading, because some of the deep well waters will show large amounts of nitrates without a trace of organic matter; and it does not follow that these nitrates have been derived from sewage. On the other hand, the celebrated Loch Katrine water contains nearly as much organic matter as that of the best London supply, and there is no doubt that, to be entirely free from suspicion, this organic matter should be separated by filtration. Professor Wanklyn's method of water analysis has given great facilities for easily assessing the value of a drinking water, and his manual on the subject should be in the hands of all analysts, for the analysis of drinking waters is now constantly required. The amount of ignorance prevailing on this subject is extraordinary. It is impossible to convince healthy villagers that they have long been in the habit of drinking a dangerous water, and the analyst must always expect great opposition to his statements. In one case in Scotland, where a good water supply was voted against, one voter said that the engineer knew nothing about it, because he had got one six inch pipe to supply two four inch pipes, which was impossible, while the other voter said the engineer could not have laid down the pipes right, because he had not measured the ground, forgetting that the ordnance map very accurately supplied him with the data. How can such people judge of the analysis of a water? The question of the water supply naturally leads to the consideration of that supply after our houses have fouled it with sewage. If we have only to deal with the water supply before and after it leaves our houses, we deal with a definite fixed quantity, comparatively so small that it is easily dealt with. At present, however, the sewage of towns contains also that very variable item, the rainfall; and wherever that has to be included, it upsets all systems of filtration, irrigation, &c., because in time of floods it must be run to the nearest river. If the water closet system is to be continued, it must be carried out in a separate system of impervious sewers; and if anything is to be done with the sewage, that result must be attained before the assistance of chemistry is called in. When the value of the material to be utilized is only one penny per ton, we must leave the towns to the tender mercies of the engineers. The question will probably resolve itself ultimately into this: That all polluting material must be kept out of the sewers; manufacturers must look after their own pollutions, and householders after theirs, the town authorities looking after the rainfall and streets. Taken at the outlet the question is extremely difficult; taken at the house it is easy; and house-to-house purification may become the real solution of the difficulty. Before leaving the subject of sewage, Mr. Stanford referred to that of disinfection, and said: "The public appear to me to be altogether on the wrong tack. Chloride of lime and carbolic acid are making our cities everywhere offensive. Both of these substances act well if concentrated; they act like the clean sharp cut of the surgeon's knife, but they do not bear dilution. Dr. Angus Smith has shown that common salt is much cheaper and better than these popular and odoriferous remedies. I have strongly urged the use of chloride of calcium for this purpose; it is the cheapest of all disinfectants, and can be got in enormous quantities." Referring to the progress of original research in chemical science, Mr. Stanford noticed the artificial production of vanillin and other substances. Mr. Stanford referred to the manufacture and large consumption of bromide of potassium in medicine, the large imports from the German potash mines, the extraction of iodine from the nitrate of soda liquors of Chili, the importance of potash in agriculture, and then enlarged upon recent attempts to improve upon Le Blanc's process for the manufacture of carbonate of soda. "The most promising improvement," he said, "is that of Hargreaves and Robinson, who decompose the chloride of sodium direct by sulphurous acid from the pyrites burners. They thus do away with the wear and tear of vitriol chambers, and produce sulphate of a high degree of purity. Large works are being erected in Lancashire for this process. One of the new improvements in manufactures that appear to be very valuable is Morfit's method of making soaps direct by the combination of the fatty acid with the carbonated alkali, thus making a soap direct without the expense of causticising the alkali, and the prolonged boiling necessary to decompose the oil or fat employed, and the loss of the whole of the glycerine. In our alkali manufactures many improvements have been introduced. One of the most notable, perhaps, is the revolving black ash furnace, which economizes labor. Labor and fuel are very important elements in the manufacture of soda ash, the raw material being low in value. In potash working the waste is the most important consideration, the raw material being expensive. The utilization of waste is still the most important of chemical questions. Wilson's process of manganese recovery and Mond's process of extraction of sulphur are valuable steps in the right direction, and each can be worked with a profit; but they are only steps, and neither can yet be considered perfect.

Recent Progress in Iron Manufacture.

In a recent number of the *Bulletin de la Societe d' Encouragement* appears the first portion of a paper by M. Gruner, on "The Mineral Industry at the Vienna Exhibition." The following is an abstract of that part of it relating to iron:

If we except gold, the value of the ores of iron surpasses that of all other minerals. We may estimate it as at least equal to an annual sum of 350,000,000 francs (at the rate of 10 francs per ton of ore). The weight of iron ores raised in 1872 reached about 35,000,000 tons, and from these ores there were produced 14,000,000 tons of cast iron, 8,500,000 of soft iron, forged or rolled, and 1,000,000 of steel and homogeneous iron; whereas in 1865 the weight of the cast iron only came to 9,000,000 tons. It thus appears that the production of iron has developed more rapidly than that of coal; the latter amounted in seven years from 180,000,000 to 250,000,000 tons, an increase represented by the proportion of 9 to 12·5, while the pig iron went up from 9 to 14. This remarkable increase has been chiefly realized by the transformation of existing blast furnaces. The number of blast furnaces working has somewhat diminished, but their volume has been increased, and there has been greater use of the hot blast.

The tendency which has predominated in forges for some years back is the production of pure pig iron, capable of furnishing steel or cast iron by the Bessemer and Martin processes. Rich and pure ores are everywhere in demand; in England the red hematites of Cumberland; in Germany and Austria the rich spathic irons of Siegen and Styria; in France the brown hematites of the Pyrenees, the manganiferous carbonates of Dauphine and Savoy. But as these deposits are insufficient, England, Germany and France have recourse, beside, to the rich mines of Algeria and the island of Elba, to Spain, and to Scandinavia. The price also of these ores has considerably risen. The hematites of Cumberland are worth more than 26 francs a ton at the pit mouth; and the ore of Mokta, for which a few years ago 12 francs was being paid, at the port of Bone, now sells (on an average) at 20 francs.

In the refining works one may perceive a double tendency. Where the pig iron is pure, recourse is had to the Bessemer and Martin apparatus, and, as far as possible, pig is used direct from the blast furnace. This is at least the case in France, and in some works of Cumberland, Sweden and Austria. On the other hand, when the pig iron is impure, puddling cannot properly be dispensed with; but it is everywhere sought to substitute mechanical treatment for manual labor, by the systems of Lemut, Dormoy, Danks, &c. Unhappily these are but partial and imperfect solutions of the problems; a mere progress toward something better. True mechanical puddling has yet to be invented. A very simple system, devised by M. Pernot, has been tried a short time at St. Chamond, in the works of MM. Petin and Gaudet. Further, there is a recurrence to the direct manufacture of iron in bars. To the Chenot processes have succeeded the efforts of Ponsard and Siemens. In place of sponges, it is sought to produce blooms, or still better, ingots, by associating the processes of reduction with the method of fusion of the Martin system. Several of these new methods are practiced, *e. g.*, at Landore, near Swansea.

In the works for elaboration, the general tendency is to increase the power of mechanical apparatus. Rails are manufactured of 6 to 12 meters, T irons from 20 to 25 meters by 0·40 to 0·50 meters hight, sheets of 2·50 to 3 meters breadth, armor plates of 0·20 to 0·30 meters thickness, &c. For such purposes there are used universal and other rolling mills of various kinds. For ordinary sheet iron the new differential rollers of Lauth are largely used in Belgium.

Among the problems which engage iron masters, we may cite the dephosphoration of pig iron. The efforts, in this direction, of MM. Heaton, Henderson, Tessie du Motay, Siemens, &c., are known. It is with these attempts as with mechanical puddling. The solution of the problem has been advanced; the difficulties are known; the way to go is perceived, but the end is not yet attained. In all these processes the dephosphoration is only partial. For the rest, slightly carbureted homogeneous irons for rails may retain a little phosphorus, without their solidity being greatly compromised. The exhibition at Creuzot contained, in this relation, a very instructive series of irons and steels, more or less pure.

Among the numerous questions raised at Vienna, in brochures, we must notice that of the nature and the definition of steel. What ought really to be understood by *steel*? M. Jordan and M. Greinert propose to call *steel*, all the malleable products of siderurgy obtained in the cast state, and to reserve the name of iron for every malleable product which has not undergone fusion. On this principle, what has hitherto been called steel, at all times and in all countries, would be merely iron; natural steel (puddled or from the forge) and cemented steel would be no longer steel, notwithstanding the particular properties which distinguish this metal from soft iron. It would at least be singular that a simple physical operation—fusion—should have, on the name and properties of the metal, a greater influence than the chemical nature. We should have to designate by the same name two very different compounds, for the sole reason that they have both undergone fusion.

It is a long time since soft iron began to be cast in the steel works. Forty years ago I saw this operation at Berardiere, near St. Etiennes. This iron was as soft and malleable, and as little susceptible of tempering after fusion as before. The only change is a greater homogeneity and greater cleanness. The scoriaceous parts, the defects of welding, which are observed in irons simply shingled, disappear completely on fusion. The iron becomes, in short, homogeneous, and the name *homogeneous iron* has long been used in England to denote cast iron not susceptible of tempering. By fusion in the hearth the iron absorbs one to three ten-thousandths of silicium, which does not sensibly modify its essential properties. Now, beside this soft iron, cast or not cast, there are hard irons, which are especially hardened by tempering, and the essential properties of which (hardness, elasticity) are completely independent of the physical operation called fusion. Here, again, fusion has no other effect than to increase the homogeneity, and often, also, the small proportion of silicium. These hard irons are, moreover, for composition and essential properties, to be placed between the soft irons and the pig irons. They are less malleable, in the hot state especially, than soft irons, and become harder by tempering, as they come nearer to the pig iron in proportion of carbon and other elements which are found united with the iron or dissolved in metal.

Steel, in a word, whether cast or not, is a product which (from all points of view) should be placed between pig and soft iron. The various ferrous products which are met with in the arts, form, in fact, a continuous series from the softest and purest iron to the most impure pig; or rather, there are two continuous but divergent series, commencing both with pure soft iron; the one leading to black iron, and passing by steel, untempered or annealed; the other terminating in white pig more or less manganiferous, and passing by tempered steel.

I adhere then to a definition I gave in 1867, and consider as steel whether cast or not, any iron more or less pure, susceptible of tempering, but which is malleable in the hot or the cold state, where it has not undergone sudden cooling. We should call soft iron, whether cast or not, any iron malleable in the hot or cold state, which is not susceptible of tempering. We should further subdivide iron, like steel, according to the mode of manufacture adopted. We should always distinguish, on the one hand, in the forges, natural steel (steel of the forge or puddled steel), as also cemented, refined steel; then, on the other hand, cast steel, Bessemer steel, Martin steel, etc.

Similarly we might distinguish soft iron, on the one hand, into welded iron, with wood or with coal (iron of low hearths, or puddled iron); on the other hand, into cast iron, called homogeneous iron; then we should divide the last more especially into homogeneous Bessemer, Siemens, Martin, etc., iron. Only, one ought never to forget that if the types are well characterized, there is a gradual passage from one type to the other; that the soft homogeneous iron passes in an insensible manner to cast steel, that soft iron, simply refined and shingled, passes to hard steely iron, then to steel properly so called, which, in its turn, merges into draw-plate steel (Wildstahl) before reaching white cast iron properly so-called.

The three siderurgical products, pig iron, iron and steel, are thus divided among the different countries. In 1872, the produce of pig iron was, in—

	Tons.
England	6,723,387
United States	2,250,000
Germany (comprising Alsace and Lorraine, 220,000 tons)	1,606,000
France	1,180,000
Belgium	655,565
Luxembourg	250,000
Austria and Hungary	400,000
Sweden and Norway	300,000
Russia	360,000
Spain	84,500
Italy	25,000
Canada, India, etc., about	100,000
Total	13,878,452

That of soft iron not cast, was in—

	Tons.
England	3,500,000
United States	1,602,000
Germany (including Alsace and Lorraine, 150,000)	1,150,000
France	883,000
Belgium	502,577
Austra and Hungary	300,000
Sweden and Norway	191,800
Russia	245,000
Spain	35,600
Italy	24,000
Canada, India, &c., about	70,000
Total	8,503,977

That of steel and homogeneous iron, chiefly in the form of Bessemer metal, in—

	Tons.
England (at least)	560,000
United States	143,000
Germany	200,000
France	138,000
Austra and Hungary	49,250
Belgium	15,284
Sweden	12,000
Russia	7,204
Spain	250
Other countries (insignificant figure)	—
Total	1,064,988

This last figure of 1,065,000 tons comprises about 700,000 tons of rails and 365,000 tons of tires, axles, plates, and various other products.

The total production of 1873 cannot be much short of 1,250,000 tons. When one compares the foregoing figures with those of 1865, a prodigous increase is observed in steel and homogeneous iron. While the production of pig iron has risen from nine to fourteen millions of tons, that of steel and homogeneous iron has tripled. Thus, in 1865, England produced only 160,000 tons of steel and homogeneous cast iron; and France, at the most, 50,000 tons. The preceding tables also show that if England still furnishes the half of the whole pig iron and steel, its production of soft welded iron is not more than 0·41 of the total figure. This relative production tends to decrease, like that of coal, owing to the immense wealth of the United States in iron and combustible minerals.

The author then passes under review the principal iron producing countries, which we omit.

Reasons for Using our Goods.

Hogs when ringed are prevented from rooting, and fatten quickly.

Pastures and clover fields are kept smooth and are not destroyed by the hogs rooting them up.

Feed lots in the winter are kept smooth, and corn that is otherwise rooted and tramped into the ground is saved.

The **Triangular Wire Ring, manufactured only by us,** is the only wire ring that can be inserted in the hog's nose with one grip on the **Ringer,** and is the only ring that will remain in a hog's nose, as it fits close, will not turn in for the joint to irritate the nose, is not liable to be torn out, and heals quickly.

No puncturing of the nose required to insert our ring.

For Sale by the Leading Jobbing Hardware Houses of New York, Philadelphia, Baltimore, Cleveland, Columbus, Cincinnati, Dayton, Indianapolis, Lafayette, Chicago, Milwaukee, Burlington, Davenport, St. Louis and San Francisco.

SOMETHING NEW.

We shall this present season make a **Heavy Tinned Wire Ring** that will not rust in the hog's nose. The strongest and best ring in the market.

Prices.

Ringers, retail	$1 00
" per doz	6 00
Rings per box (100) coppered wire	50
" per doz boxes (1200) "	3 00
" per box (100) tinned wire	60
" per doz. boxes (1200) tinned wire	4 00
Tongs or Holders retail	1 25
" " per doz	9 00

The coppered wire ring will be sent unless otherwise ordered.

Samples by mail postpaid on receipt of retail price.

Goods sent C. O. D. with privilege of examination before paying charges.

Net prices in quantities, circulars and posters mailed free.

Our advertisements are now inserted in over 1800 newspapers, published in every State of the Union, so that dealers will find a large demand created for our goods.

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All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand or upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

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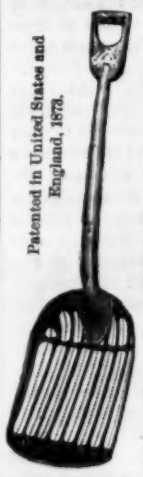

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PENNSYLVANIA FILE WORKS.

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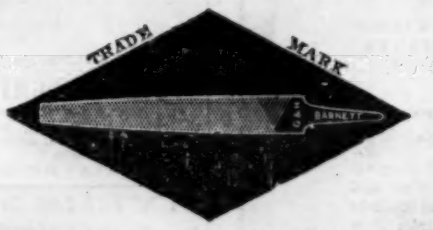

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BUSINESS ITEMS.

NEW YORK.

The property of the Peekskill Iron Company changed hands last February, and the purchasers, a new and strong company, elected Mr. Thomas F. Wright, president and manager of the furnaces, and Mr. Hugh W. Adams, treasurer, with office at No. 56 Pine street, New York. Their first business was to make extensive alterations and improvements, including the raising of the stack from 42 to 61 feet, and otherwise enlarging and improving it. A steam elevator was also put in in place of the hydraulic lift hitherto used. It consists of a steam cylinder 12 feet stroke of piston, geared 12 to 1. One stroke of the piston raises the platform to the top of the stack. They have also put in a new hot blast oven. The stack was blown in on the 21st of August last, and up to the 17th instant had made 2500 tons, all of which, with the exception of a few tons of white and mottled, has been sold. The ores are used in the proportion of one-half magnetites from the Croft mine, owned by the company, six miles from the furnace, and one-half hematites from the company's mine at Amenia.

NEW JERSEY.

The Delaware Rolling Mill, located at Phillipsburg, is quite an extensive establishment. The building is 200x80 feet, and well equipped with all the necessary adjuncts for carrying on the business. There are two heating furnaces, seven puddling furnaces, two steam hammers, four shears, one for cutting railroad bars; two train rolls, one nine inches and one sixteen inches, and a Sturtevant blower. Four steam engines of 140, 40, 30 and 5 horse-power respectively, furnish the necessary power for running the works. These are furnished with steam by twelve boilers, eight cylindrical, three flue and one tubular. About three hundred tons of merchant iron are turned out per month, but the establishment has a capacity of 600 tons during the same time, valued at $40,000.

PENNSYLVANIA.

The Lehigh Chain Works, that have been idle in South Bethlehem for several months past, will, it is said, be removed to Boston shortly and be put in operation there.

A most extraordinary day's work, says the *National Car Builder*, has been done in the rail mill of the Pennsylvania Iron Works, Danville. There were heated, rolled, sawed, hot piled straightened and punched, and in all particulars made ready for use, 156 tons of rails, a feat that has never before been accomplished in the world inside of twelve hours, through one set of rolls, and with the usual force of men.

Messrs. Young & Schlough, of Easton, proprietors of the Eagle Foundry and Machine Shops, manufacture at their works cog wheels, and saw-mill and grist-mill machinery. They have three brick buildings, a machine shop 40x60 feet, three stories; blacksmith shop, 20x40 feet, mostly two stories; foundry, 40x60 feet. They make a specialty of gearing, wheels, pulleys and machinery for mills, etc., having a very large number of different patterns for their various manufactures.

The Robesonia furnace, in Berks county, is in full blast.

Jonathan Warner has two furnaces at Mineral Ridge, which makes a superior quality of iron, nearly as good—so says report—as Scotch iron. He uses black-band ore, mixed with other ores. Both furnaces are now in blast.

The heaviest shipment of steel and iron rails since the organization of the Bethlehem Iron Company was made from their works during the past few weeks. On Friday there were shipped from the works 340 tons of steel rails and 100 tons of iron rails, which were loaded on forty-four cars. On Saturday the shipments amounted to 360 tons of steel rails and 60 tons of iron rails, making a total of 860 tons of steel and iron rails in two days.

It is reported that the Mt. Carbon Rolling Mill is to start up immediately, having received an order large enough to keep the mill well employed for some time. They will run fifteen furnaces, and will puddle with ore. The company have recently received a supply of Champlain ore, and are all ready to commence operations.

Of the seven furnaces in New Castle, but one, the Shenango, is out of blast.

The Bessemer steel works in Scranton will be completed and in operation next June.

Work has been resumed at the Altoona Rolling Mill, which has been idle for some time past. The mill is running on the full time.

MASSACHUSETTS.

The Fitchburg Machine Company, at Fitchburg, are now running full time again, and with double the number of workmen that were employed a month ago. The shipments will be larger this month than for any other during the year, which speaks well for business at the close of the year, as the last month is usually the dullest.

Forehand & Wadsworth, pistol and gun manufacturers, Worcester, are now employing about half of a full force of men, working ten hours a day. This force will not probably be run during the winter, but will be reduced in numbers.

A cutlery manufactory is soon to be started in Baldwinville by parties from New Hampshire.

The Wason Car Manufacturing Company, of Springfield, are about to begin work on their contract for cars for the New Jersey Central Railroad. They have also lately received an order from the same company for one thousand pairs of car wheels and axles. The contracts will probably occupy the works for five or six months, and will furnish employment to about 400 men.

The shops of the Boston and Albany Railroad Company, at Allston, now employ 200 men, having reduced the running time to eight hours per day on the first of the present month. There are no cars now building there, and the work is confined to repairing the cars that come in from the road.

The Clark & Chapman Machine Company, at Turner's Falls, have orders enough on hand to last them until next March. They are putting in a $2000 three-foot turbine wheel for the Montague Paper Company.

CONNECTICUT.

The Woodruff Iron Works, of Hartford, are to put in the machinery of the United States steamer Enterprise, about to be built at the Portsmouth Navy Yard.

MAINE.

The Eastern Wire Works, at Harrison, which have been suspended for some time for lack of water, commenced partial operations last week.

After a stoppage of a few weeks, for repairs, the Katahdin Iron Works have again commenced to produce iron. Ten tons per day of No. 1 metal are now made, which is used in place of Scotch iron for nice machine work and steel, several shipments having recently been made to the New Jersey Iron and Steel Company. Contracts have been made for 10,000 cords of wood, which is now being cut, the whole employing 100 men and 75 horses. The company expect to ship largely over the B. & B. Road this winter. On the whole, the works are in a satisfactory condition.

A company has been organized to start a britannia manufactory at Morrill's Corner. The building, which is already up, is 48x28 feet, two stories high, and the machinery will be run by steam-power from Bucknam's tannery, near which it is located. The proprietors are Charles L. Goodrich, George Goodrich, A. A. Stevens, E. C. Stevens and Thaddeus J. Noble.

NEW HAMPSHIRE.

Messrs. Bartlett Bros., of South Tamworth, are doing full more than their ordinary business in the manufacture of hand rakes. The low price of stock has induced them to increase their production, which gives employment to an additional force of workmen, who would otherwise be out of work for the winter. The company have a good water-power, situated on the Bear Camp River, and use two of the Chase patent turbine water wheels for driving their machinery. They have also one of the Chase Turbine Company's circular saw mills, for manufacturing ordinary lumber.

OHIO.

The Lawrence Iron Works are repairing, and will not start up until after New Year, there being nothing in the way of orders urging them.

The Girard Iron Company, whose works have been running during the panic, have now but about 300 tons on hand, though they average 40 tons per day. Last summer the company laid in a large stock of material, as transportation on the lakes was cheap, and they intend to work up all they now have on hand.

In consequence of the employes of the Niles Iron Company not accepting a reduction of wages, the mill has been closed for the present. The company have contemplated removing their mill to Hazleton, but have not yet come to any decision, as they have recently been boring for gas at their present location, and will probably await the result of the experiment. They discharged the boilers of their mill on the 24th ult., owing to having a supply of muck bar ahead.

The Ironton Mill has closed, with no prospects of an early resumption.

The new rolling mill at Ashtabula has commenced operations. It is owned by a stock company possessing ample means, while the managers are men of large experience in the business. The works are supplied with improved machinery, consisting of three puddling furnaces, one scrap furnace, one sheet mill, two spike machines, two single band machines and two washer machines.

Among the most extensive iron works in the West are those of Messrs. W. Richards & Sons, at Warren, consisting of a blast furnace and rolling mill, which have been steadily employed during the past year, double turn, with a full set of hands. All the iron made at their furnace is consumed in their mill—the quantity amounting to 225 tons per week.

At Ashtabula are located the Phœnix Iron Works, a new establishment, the property of Messrs. Tinker & Gregory. There are two brick buildings, one 34x75 feet, the other 45x70 feet. These works were finished about ten months ago, and have been running steadily ever since, manufacturing plows, steam engines, and machinery generally.

William Ward & Co., Niles, are now making, on an average, at their furnace in that place, 25 tons of iron daily. The nail mill formerly owned by James Ward & Co. has been purchased recently by Mr. William Ward, of the above firm, but he does not contemplate using it for the present.

International Railway Congress.—The Swiss government has presented notes at London, Berlin, Paris, St. Petersburg, Vienna and Rome, proposing an International Congress of all railway administrations in Europe. Four points are, it is stated, proposed for deliberation, viz.: (1.) The limits of the responsibility of the company which originally receives goods for a distinct destination and that of the companies which transport the goods afterward. (2.) What is to be considered a competent tribunal in case of disputes between the diverse interests? (3.) The establishment of a uniform procedure to ascertain the damages caused to goods during the time they are in the keeping of the railway companies. (4.) The acceptance, as a general rule, that the company which finally delivers the goods shall be responsible to the receiver, receiving, of course, its rights as against the companies which preceded it in the carrying.

A Warehouse System for Pig Iron.

The following is an abstract of the paper read by Mr. Edward Samuel, of Philadelphia, before the pig iron branch of the American Iron and Steel Association on the 10th instant:

I desire to explain to you the advantages and working of the system inaugurated in this country by the Pennsylvania Warehousing and Safe Deposit Co., of this city. Heretofore persons wishing to store iron have been obliged to send it to the cities on the seaboard, for instance, Philadelphia, Hoboken or Elizabethport, and even at these points, but meagre storage facilities exist, the business being carried on by individuals, who have in consequence of the limited business done, and the small amount of capital required to carry it on, invariably refused to give clean certificates, or, in other words, to assume any responsibility as to the weight holding out on its ultimate delivery from their storage yards. These warehouse men have also been obliged, in consequence of the great value of the property used by them, and the high rates for labor they are obliged to pay, to charge for storage, weighing, piling and delivery rates, which, when iron was selling at $50 per ton, were not onerous, but now, at the low prices, they form a considerable percentage of the value of the iron stored. To overcome this the Pennsylvania Warehousing and Safe Deposit Co., after consultation with many parties in interest, determined to establish at the centers where iron is made, large storage yards, believing that such points were more favorable to the manufacturer for the following reasons.

1st. The value of ground and labor being consideracly less than in the cities enables them to do the busines at much less cost, and consequently much lower charges to the persons using these yards.

2d. By having the iron stored at such points as Allentown, Reading, Harrisburg and Pittsburgh, which are all railroad and iron centers, shipments can be made from the furnaces to these yards at a much smaller freight than to the sea board; and, further, when in these yards, the iron is in such a position that it may be shipped to the best market at nearly the same rate of freight as it could have been if it were shipped directly from the furnaces where made. The saving alone in freights by this plan will be large.

The company will open its first yard for business at Allentown on Dec. 15th, and negotiations are now pending for yards at the various places named, which yards it hopes to open at an early day.

The mode of operation is as follows: Persons desiring to use the yards consign their iron thereto, sending the manifest to the superintendent. The iron is weighed on receipt, for which a charge of 5 cents per ton is made, is then piled, marked with the depositor's name and registered in the books of the company.

The company then issue to the depositor a certificate or receipt like the one I now show you,* which, as you see, sets forth not only the depositor of the iron, but also the quantity and its represented grading. The charge for the first month's storage is ten cents per ton, and for subsequent months five cents per ton for each month. On the delivery of the iron on cars at the yards a further charge of twelve and a half cents per ton for delivery will be made, and also five cents per ton for weighing out, the company obligating themselves to deliver the same iron and the same weight as received and set forth in the certificate. This obligation as to weight is a most important matter, not only in the avoidance of loss by short weight to the depositor, but in making the certificate a better security for parties loaning money thereon. These certificates being issued by a company of large capital and responsibility, will be a security second to none in the market for borrowing purposes, and ultimately will be bought and sold the same as English iron warrants now are. Therefore, if you had in your furnace bank a thousand tons of iron and wanted to borrow a five dollar bill on it, that iron was of no use for that purpose. Under the new system you can readily see its availability. The result of this will be that iron which has heretofore been forced on the market at ruinous prices in consequence of the necessities of its makers, will now be held for better figures, thus creating a steadier market and more uniform prices. Persons who desire to buy iron at the prevailing low prices, but who have not cared to lie out of their money, can now buy these certificates either for present or future delivery, and by borrowing on them at low rates of interest, pay the maker for his iron. This will give you a market in the dullest times, which can be taken advantage of or not by sellers, as they see fit. Beside this, it will reduce transactions to a cash basis.

It is self-evident that an easy source of money supply is necessary for the successful carrying on of any trade requiring such large outlays as that of iron, and I think that in this system you will readily see that money will be easily obtainable at the lowest prevailing rates on so excellent a security as these certificates offer.

This system has been in vogue for many years in England with excellent results. To enable shipments to be made at favorable rates of freight to these yards, I have lately been in correspondence with the Lehigh Valley Railroad Company, and their general freight agent, Mr. Taylor, has agreed to give a drawback to the original shipper on all iron shipped to these yards from any point on their line, when the iron is withdrawn from the yard and shipped to its ultimate destination. The amount of this drawback will be determined in a few days, and you will be informed of it. I have assurances that similar freight arrangements can be effected with the Reading and Pennsylvania Railroad Companies. There are many other favorable points connected with this storage system which I have no doubt will strike you, and which I believe will in time cause the majority of iron made to be put in these yards. The charges are certainly low enough to create business, aggregating but one dollar per ton for the first year, covering all charges of receiving, weighing in and out, piling, storage and delivery. If I have failed to explain any points which you do not understand, I shall be pleased to answer any questions.

*The receipt referred to by Mr. Samuel reads as follows:

No. .... Tons ....

PENNSYLVANIA WAREHOUSING AND SAFE DEPOSIT CO.

PHILADELPHIA, ..., 187..

The Pennsylvania Warehousing and Safe Deposit Co. hereby acknowledge to have this date received from ....., and will deliver free on board cars at.....yard to..... or order, only on the surrender of this certificate and the payment of all charges thereon.....

The Iron above set forth is stated to have been made by.....and graded as.....tons No. 1, ...tons No. 2, ...No. 3, ...tons W. & M., but this Company assumes no responsibility except as to weight.

Stored in..... yard.

Charges:

Receiving and Piling, 12½ cts. per ton.
Weighing, 5 cts. per ton.
1st month, or portion of month, 10 cts. per ton.
Subsequent months, or portions of month, 5 cts. per ton per month.
Delivery and Weighing, 17½ cts. per ton.

..... Superintendent.
SEAL ..... Yard.
..... President.
Attest..... Secretary.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Dec. 21, 1874.

The near approach of the Christmas season and the close of the year have the usual effect upon wholesale trade, and most that is being done is in the retail way for holiday gifts. The usual summing up of the business done by the various branches of trade for the closing year is being made, the results generally showing that a much larger trade has been transacted than was hitherto supposed. Most people look hopefully to the incoming year, and few but will gladly bid farewell to 1874 as a season of doubt, perplexity and trial.

The feature of the week has been the opening of the new building of the Pennsylvania Warehousing Company. This company provides not only unusual and hitherto unenjoyed facilities for the storing of various products at the seaboard, but is the first to inaugurate the system of iron storage at points of consumption. As the building in itself presents many features of interest, from its great size and the accommodations it offers, a description here will not be untimely.

The new warehouse is located on the site of the old Patterson bonded warehouse, which was destroyed by fire, together with an immense stock of whisky, some four years since. The building is of brick, being 213 feet in length and 130 feet wide. From the peculiarity of the location, the new warehouse has been made of five stories high on the Penn street front, rising 44 feet from the sidewalk, and three stories on the Lombard street front, and with a full storied cellar underneath, gives a total of six stories in all. The peculiar arrangement of thoroughly fire-proof construction is here attained by brick walls, which are carried above the roof and covered with metal roofing, thus dividing it into five distinct fire proof structures. Below the third story the entire building is of brick and iron—while above, brick and wood are used in preference, this form having been considered best after experience with similar buildings exposed to the great fires of Chicago and Boston. The methods provided for handling goods are of the very best kind, and include ten elevators worked by steam, and running from the cellar to the top floor, while the entire space afforded within the building for storage equals an area of four acres.

Arrangements have been made for the connection of the warehouse with the tracks of the Pennsylvania and Philadelphia, Wilmington & Baltimore Railroads, and thus with the steamship and other docks and the grain elevators. The designs for the building were furnished by the engineers and architects of the Pennsylvania Railroad Company, and the whole work done under their supervision by the contractor, Mr. John Rice. In addition to the usual clauses allowed in warehousing charters, this company is entitled by an "Act to incorporate the Inland Safety Mutual Insurance Company," to advance money and credits upon any property in its custody, or upon bills of lading, receipts or certificates representing goods on storage elsewhere or in transit, &c., &c. At present it is said the business of the company will be strictly confined to the warehousing branch. The officers of the company are Thos. L. Jewett, president; B. K. Jamison, vice president; Chas. P. Scott, secretary and treasurer, and J. M. Collingswood, general superintendent. Mr. Edward Samuel is the agent of the iron storage department, with office at 322 Walnut street, and those owners of pig or other iron interested in the success of the movement can obtain all information from him relative to it.

The formal opening ceremonies were held on the 15th inst., and were attended by prominent merchants, railroad and business men, and included the adoption of the following resolutions, which were offered by the president of the Commercial Exchange, Mr. Samuel Hartranft, Gen. Robert Patterson occupying the chair:

Whereas, In this age of railroads, steamboats and telegraphs, making intercourse between the most distant sections of our vast country rapid and easy, ample warehousing and storage facilities are indispensable to the commercial progress of any city: and

Whereas, The trade and commerce of Philadelphia are making such giant strides as to inspire well founded hopes that, at no distant day, our city will assume that importance, commercially, which she has long enjoyed as the chief center of manufacturing industry: and

Whereas, The supply of warehousing and storage facilities have not, hitherto, kept pace with the steadily increasing wants of our merchants, whereby progress has been seriously retarded and much trade diverted to rival ports where these accommodations are more liberally furnished by their citizens: therefore

Resolved, That the enterprise and public spirit displayed by the gentlemen to whom we are indebted for this mammoth building, have conferred a lasting benefit upon Philadelphia, which cannot be too highly appreciated by her citizens.

Resolved, That the Pennsylvania Warehousing and Safe Deposit Company, whose business career is this day inaugurated, deserves and will receive a liberal and cordial support from every merchant of Philadelphia.

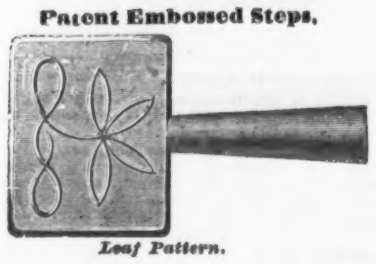
Resolved, That a copy of the above preamble and resolutions be presented to the officers of the company as a mark of the esteem and confidence of this meeting, and as an earnest of its good wishes for the complete success of the enterprise in which they have embarked.

This new company is a very important addition to the growing commercial facilities of Philadelphia, and may be regarded as a direct outgrowth of the formation and successful management of the American and International Steamship lines. As the first step in the new system of providing storage for pig iron at the point of consumption, and improved opportunities for the sale thereof by warehouse receipts or warrants, it is of both importance and interest to the trade, and its progress will be watched with care. Similar branches for storage will be established at various points in the interior, both at producing and consuming centers, and it is believed will be of direct benefit in systematizing and increasing trade in pig metal.

The regular monthly meeting of the Franklin Institute developed some unusual features in that usually harmonious association. These were complaints from certain members in regard to the management of the late exhibition, and especially relative to the reversal of the awards of the examiners to various exhibitors by the board of managers. Several exhibitors, members of the Institute, complained of unjust treatment, and letters from many others, not members, have been received. After considerable discussion the subject was postponed until the next monthly meeting, when full reports of committees could be received. In engineering matters considerable interest has been excited by the opening of the tunnel through the Musconetcong Mountain, on the Easton and Amboy Railroad, which, when finished, will give another all rail route from the Lehigh Valley to the seaboard at Perth Amboy, New Jersey. This tunnel is about a mile long and runs through Musconetcong Mountain in Warren county, New Jersey. Two years and a half have been spent in the work, owing to the hardness of the rock, and the present opening is only as yet the meeting of the two headings. The road will be opened in the spring.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Patent Embossed Steps.

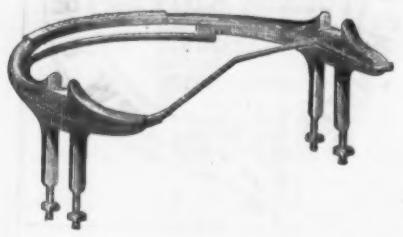


Leaf Pattern.

King Bolt Yokes.

Established 1850.

No. 6 Fifth Wheels.



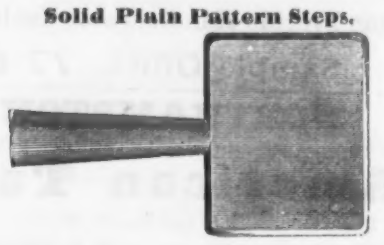
1871 Pattern Shaft Couplings.

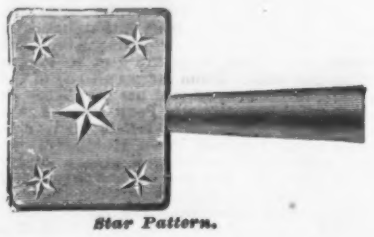
Patent Cross Bar Steps.

Upper View.

Lower View.

Solid Plain Pattern Steps.





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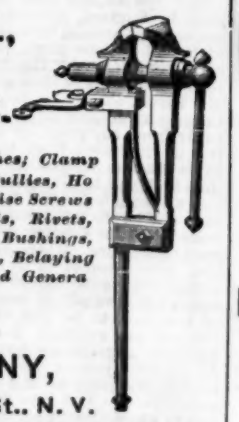

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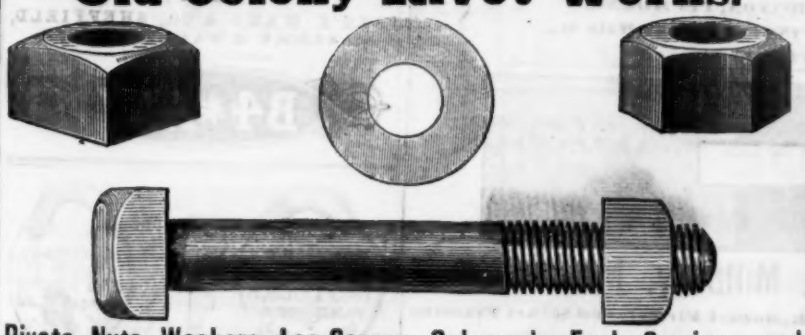

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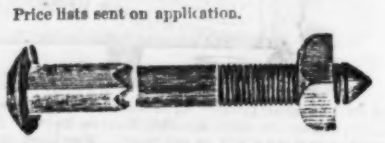

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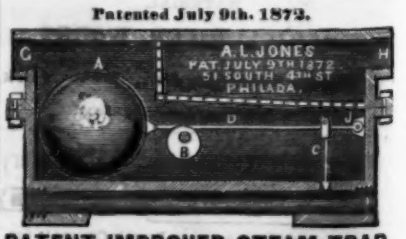

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The Iron Age.

New York, Thursday, December 24, 1874.

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CONTENTS.

Suitable Ores for Bessemer Pig Metal.

In a previous article referring to the absolute necessity for the blast furnaces of the United States reducing the cost of production by the only means in their power, the use of cheaper ores, we incidentally referred to the great increase in the production of Bessemer steel, and the consequent demand for a brand of pig iron suitable for conversion into that metal. At the same time the high cost and presumed scarcity of ores suitable for the manufacture of Bessemer pig were noted, and the assertion made that this difficulty must be overcome by proper research among the mineral deposits of the country, and the production of Bessemer metal be allowed, especially in the form of rails, at a cost which will admit of their sale very little, if any, above that which ruled for iron rails a year since. These statements were, by a coincidence, very perfectly sustained in the same issue by the letter of Hon. Daniel J. Morrell, who, writing us from Johnstown, Pa., Dec. 5th, 1874, says: "Steel rails are "now sold below the price obtained for iron "rails at the time of the failure of Jay Cooke, "and the market for low grade iron rails "must be hereafter exceedingly limited, "a condition which will affect the production of inferior pig metal. The longer life "of steel rails makes them more economical "in the end than iron rails, and companies "able to pay the difference in first cost will "give steel the preference. Iron rails of "poor quality will find no market, the better "grade will be employed by the roads having light traffic, first-class roads will be "compelled to use steel, and will find it to "be to their advantage. There will be a demand for superior grades of metal suited "to the manufacture of steel, and better "grades are now being produced. There is "great activity in the way of improving furnaces, in the selection of pure ores, the "washing of ores and coal, and other matters which will have a tendency to raise "the quality of the product."

The peculiarity of the Bessemer process consists in the fact that but one element of the constitution of iron ores is fatal to its success, and that element is phosphorus. Sulphur in a limited degree, also, unfortunately a general accompaniment of the natural oxides of iron, can be eliminated; silica, if not too high, has been found rather beneficial as silicon in the pig metal designed for Bessemer purposes. Both of these elements were, in the earlier days of the process, considered quite as fatally injurious to the resulting steel as phosphorus; and even that impurity may cease to be troublesome in the converter when we know better how to deal with it. For the present, however, we are restricted to the use of a pig iron in the converter practically free from phosphorus, and which must be made from ores containing, at most, a very low percentage of that substance.

Experiments have been made to determine the amount of phosphorus which Bessemer steel may safely contain, and the best authority on that subject in the country, Mr. A. L. Holley, has stated that this depends upon the amount of carbon also contained in the steel, a higher degree of phosphorus being admissable with a lower degree of carbon, and *vice versa*. The precise amount of phosphorus admissable in Bessemer pig iron was stated by Mr. Bessemer himself, in an address before the Institute of Civil Engineers, in 1865, at one-tenth of one per cent., which may, with slight modification, be considered still the governing rule. To make such pig requires an ore of great purity, and with comparatively few exceptions, in the United States, of more or less scarcity. The first Bessemer metal made in the United States, and indeed all that was made for years, was converted from West Cumberland pig from England, and it was not until some years had elapsed that Lake Superior or Iron Mountain ores were used. Even at this date Algerian ores are imported into this country and used for Bessemer and Martin steel, although costing at least $20 per ton, delivered at works, and being in reality no purer or richer than ores which we have lately mentioned in these columns from Tennessee, New York, Michigan and Missouri. Practically, the supply of Bessemer pig has been greatly dependent on the ores of the Lake Superior region and Missouri. The magnetic ore from the "Podunk" mine, situated some four miles from Fort Ann village, on the Saratoga and Whitehall Railroad and Champlain Canal, in Washington county, New York, has also been a favorite in admixture for this purpose, and has been and is largely used. This is a large and well developed mine, and is surrounded by very extensive deposits of pure ore equalling that already worked. Indeed, we are credibly informed that the amount of magnetic ore is scarcely equalled by the deposits of Port Henry, Moriah township, Essex county, New York, which, though rich, are unfortunately totally unfitted for Bessemer purposes.

With the exception of the spathic and titanic ores of New York, hitherto noted, this State contains few if any other ores suitable for Bessemer purposes, and pending the development of Tennessee and Alabama ores, also pointed out hitherto as suitable, the Bessemer industry may be said to depend on West Cumberland pig, or Algerian, Lake Superior and Iron Mountain ores. For the Eastern Bessemer works, those of Johnstown, Harrisburgh, Bethlehem and Troy, and to which we may add those building at Pittsburgh and Scranton, the distance from the mines and furnaces of Lake Superior or Missouri is too great to admit of cheap material. The high water freight to Cleveland or Erie, added to the other demands for Lake Superior ores to supply the numerous stacks of the Mahoning and Shenango valleys, will maintain the price of these ores beyond any hope of a material reduction.

Clearly the requirements of the Bessemer steel industry demand a supply of ores, in addition to those already noted, which shall equal in purity and richness those of the northwestern mining districts. The question then arises is there accessible to the works east of the Alleghanies, and to the furnaces upon which they must rely for pig metal, a region containing deposits equal to, and if possible precisely similar in formation to, those of Lake Superior or Missouri. Although this has been always denied, and the assertion will excite comment, we venture the statement that such an ore region does exist within easy transportation of the Lehigh, Schuylkill and Susquehanna valleys. That it has been hitherto undeveloped is no argument against either the quantity or quality of the ores. This region is located in Virginia, and occupies a territory of some twenty miles in length by three to five miles in breadth. The geological formation is very similar to that of the Lake Superior region, the ores are identical in character, the rocks are the same, and the great peculiarity of that region in the different varieties of ore in the same section, beginning with magnetic and proceeding through red oxide, specular, spathic and hematite, all in a limited area, and in several notable cases in the same vein formation, is here noticeable. As to quantity, it is impossible in a region elevated above water level from 250 to 400 feet, and from eighteen to twenty miles long and three wide, containing, in well marked veins, no less than twenty-three in number, the smallest of which is five feet wide, and the largest, as opened, over sixty feet wide—to compute the amount of ore which can be mined from such an area of mineral wealth. In evidence of these statements, we subjoin the following table of analyses made during the present month by Prof. F. A. Genth, of the University of Pennsylvania, from fairly average samples of the veins named, and taken rather at random than with any knowledge of any particular vein:

ANALYSES OF MAGNETIC & SPECULAR ORES FROM VIRGINIA, MADE BY PROF. F. A. GENTH, DEC., 1874.

	No. 1. Specular.	No. 3. Magnetic.	No. 5. Blue Magnetic.	No. 6. Specular.	No. 10½ Magnetic.	No. 11 Magnetic.	No. 16 Magnetic.	No. 18. Specular.
Silicic Acid (Quartz)	30·90	4·10	14·67	3·04	16·60	11·33	3·29	23·08
Titanic Acid	0·20	0·15	0·12	0·10	0·16	0·22	trace	0·43
Phosphoric Acid	0·37	0·02	0·03	0·11	0·54	0·70	0·08	0·55
Ferric Oxide	55·04	90·74	69·36	91·39	75·69	81·66	95·24	64·40
Manganic Oxide	0·17	0·11	0·32	0·17	0·26	0·20	0·09	0·27
Alumina	10·94	4·43	1·96	4·20	3·06	3·06	0·53	7·07
Magnesia	0·68	0·13	0·06	0·15	0·26	0·18	0·07	0·45
Lime	0·97	0·29	0·33	0·20	1·99	1·38	0·04	0·71
Water	1·27	0·04	0·18	0·64	1·40	1·06	0·66	1·04
Metallic Iron	*38·53	65·71	57·68	68·97	52·96	57·90	66·93	45·08
Phosphorus	0·16	0·009	0·035	0·048	0·237	0·307	0·035	0·24
	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

* Analysis at another point yields 58·73 metallic iron.

Nos. 10½ and 11 are not given as strictly Bessemer ores, although many of more impure quality are now daily used in admixture for that purpose. The others are all, however, to be considered as ores offering precisely the requirements for Bessemer pig, and as such are within easy reach of the furnaces east of the Alleghenies. To show the comparative value of these ores with those of Lake Superior, the following table of analyses by Prof. Newberry, and previously published in *The Iron Age*, is here quoted:

ANALYSES OF LAKE SUPERIOR ORES, BY PROF. NEWBERRY, 1874.

1. Jackson Mine.
2. Cleveland Mine.
3. Lake Superior Mine (Specular).
4. Lake Superior Hematite.
5. Lake Angeline (Specular Jasper).
6. New York Mine.
7. Spar Mountain (Magnetic).
8. Washington Mine (Magnetic).

	1.	2.	3.	4.	5.	6.	7.	8.
Peroxide of Iron	93·75	88·50	66·70	79·80	73·00	90·00	69·21	91·96
Oxide of Manganese	trace.	trace.	trace.	0·10	trace.	trace.	trace.	0·23
Alumina	0·73	1·84	1·64	2·05	0·92	1·47	2·67	0·45
Lime	0·61	0·80	0·57	0·45	0·33	1·20	0·67	0·89
Magnesia	trace.	0·25	0·24	0·53	0·34	1·00	0·19	0·77
Sulphur	0·20	0·75	0·02	0·03	0·02	0·02	0·35	0·03
Phosphoric Acid	0·03	0·01	0·02	0·02	0·03	trace.	0·47	0·03
Silica	3·27	6·40	25·00	12·54	25·00	4·72	trace.	5·78
Water	1·09	1·23	0·61	4·25	1·21	0·96	....	0·96
Total	100·08	100·08	99·74	100·08	99·99	99·37	99·37	99·90
Metallic Iron	65·63	61·95	60·69	55·86	50·40	63·00	64·60	66·94
Phosphorus	0·14	0·20	0·06	0·13	0·03	0·22	....	0·03
Sulphur	0·01	0·01	0·02	0·03	0·02	0·03	0·35	0·03
Specific gravity	4·64	4·64	4·85	4·13	3·97	4·64	....	4·66

The following comparisons are made, not with a view of detracting from the excellence of Lake Superior ores, but to establish the existence of equally good ones in Virginia:

COMPARISONS BETWEEN LAKE SUPERIOR AND VIRGINIA ORES.

	Metallic Iron.	Phosphorus.
Best Lake Superior, Washington	65·94	0·11
Best Virginia, No. 16	66·32	0·035
Second Best Lake Superior, Jackson	65·62	0·14
Second Best Virginia, No. 8	65·71	0·009
Third Best Lake Superior, New York Mine	63·00	0·22
Third Best Virginia, No. 6	63·97	0·048

These comparisons indicate that the three best Virginia ores here tabulated contain in each instance more iron and less phosphorus than the three best ores of Lake Superior, the Virginia analyses also being from outcrops, and those of Lake Superior from present workings, generally at considerable depth. And to further demonstrate that we have in this region material which will compare favorably with and, indeed, surpass the celebrated ores of Sweden, a comparison is here given of two well known Swedish ores, the Gallivara and Dannemora:

COMPARISONS BETWEEN SWEDISH AND VIRGINIA ORES

	Gallivara, Sweden.	Dannemora, Sweden.	No. 8, Virginia.	No. 16, Virginia.
Silicic acid	3·10	12·54	4·10	3·29
Phosphoric acid	1·17	trace.	0·02	0·08
Titanic acid	....	Sulph. 0·04	0·15	trace.
Ferric oxide	90·65	86·48	90·74	95·24
Manganic oxide	....	0·10	0·11	0·09
Alumina	0·85	0·29	4·43	0·53
Magnesia	0·60	0·61	0·12	0·07
Lime	2·35	0·38	0·29	0·04
Water	....	0·11	0·10	0·66
	....	Carb. A 0·12	....	....
	98·82	100·67	100·00	100·00
Metallic iron	65·6	62·6	65·71	66·32

The magnetic and specular ores here shown are abundantly qualified to take the place of the Michigan ores east of the Alleghenies, and to supply the furnaces of the seaboard with fully as choice material at far less cost than Michigan ores can reach Western furnaces. In addition, however, to the ores named are numerous deposits of very pure brown hematites, rich in iron and free from phosphorus, while sulphur is unknown in the ores of this region. An analysis of these ores shows them to yield an average of 44 per cent. metallic iron, while that of one vein made in 1835, by Prof. W. H. Rodgers, gave as follows:

Peroxide iron	76·00
Alumina	·50
Silex and insoluble matter	13·00
Water	10·00
Loss	·50
	100·00
Metallic iron	53·20

Nor, while we are in search of material for the Bessemer industry, can we afford to ignore the existence here of the ores of manganese, which supply, in admixture, the precise material for the production of spiegeleisen. Hence we append the following analysis by Prof. Genth of

MANGANESE ORE.

Silicic acid	2·74
Phosphoric acid	0·76
Binoxide of manganese	66·91
" cobalt	0·79
Ferric oxide	18·34
Alumina	1·50
Magnesia	0·40
Lime	0·98
Water	5·00
Baryta	2·63
	100·00
Manganese	42·34
Phosphorus	0·33

Those acquainted with the metallurgy of spiegeleisen will readily see that the use of this ore with brown hematite, mentioned above, or, indeed, with the magnetites named, would produce the very best quality of that metal. To those however who wish an exact reduplication in the United States of the ores used in the Musen-Stahlberg Works, of Rhenish Prussia, the most celebrated spiegel producing region of the world, it is only necessary to give the proper proportion of the manganese ore here given to the spathic ore of Columbia county, New York, to produce it. We have given above an example of but some six or seven veins out of a positively proven list of at least 23 parallel veins, many of which are richer in iron, and all low in phosphorus and free from sulphur. In width, a fair average would probably be, at surface, 18 feet, ranging from 60 feet down to 5 feet. In length of clear vein matter traced in surface we have in no instance less than four miles. The formation is, of course, cut and disturbed in places, but the remarks here made refer to continuous surface tracings, made with great care. Whenever opened, these veins increase rapidily in width, and improve in quality as mined, but the analyses above given are entirely from surface ores, or at a depth of not to exceed 4 feet. Taking the whole at the shortest distance traced, viz., four miles, and the least width, 5 feet, and counting the 23 veins proven, we would have an amount equivalent to ninety-two miles of ore five feet wide. When this is reckoned at over two hundred feet above water level, and the ore found at that level also, as shown by the erosion of water courses, it is quite unnecessary to compute the amount which may be obtained by intelligent mining.

At present rates of freight these ores, including cost of mining and handling, can be put in Philadelphia at $3·50 per ton; in the Susquehanna Valley or Schuylkill valleys for $4, and on the Lehigh for $4·50 to $5 per ton. These rates include simply actual cost of mining and transportation, as can now be done by contract, but presuppose the ownership of the ores by furnaces consuming them. An addition of $1 per ton for profit would be ample to remunerate ore companies working them, and would make them cost, at the highest, $6 per ton, which for an ore containing 65 to 66 per cent. of iron, and practically no phosphorus is, we submit, cheaper by far than any such ores can be obtained in the regions above referred to. With such ores in the abundance here stated, the Bessemer industry may be extended at will, and that metal produced not only for rails, but ship plates, deck beams, machine uses, and all the purposes for which it is so well adapted. For superior bar iron, or forge pig from which to produce it, an opportunity is here offered to rival Swedish irons, and also furnish the very choicest material for conversion into crucible or Martin steel. The iron made from specular ores, it is moreover to be remembered, furnishes for car wheel uses the same properties of chilling as possessed by the best cold blast charcoal iron made from pure hematites. The lands containing these ores are to a great extent untrammeled in any way. They can be had at fair prices, less than ten per cent. of what similar ores can be had elsewhere. They are not controlled by capital or corporations, but remain in the hands of the original owners, the tillers of the soil, who, as a rule, will sell them at low prices. They are accessible to present methods of transportation, and are within easy reach, in both distance and cost, of the furnaces of Eastern Pennsylvania, New Jersey and Maryland. The information here given has been obtained from the most thoroughly reliable sources, and is for the first time published, the analyses quoted having been only made for the first time during the current month. We are happy, especially at this juncture in the pig iron industry, to be able to note the existence of such a supply of rich, pure and cheap ores, and feel justified in stating that by their use the future of the anthracite iron industry on the seaboard may be made profitable alike to producer and consumer. To capital either, native or foreign, seeking investment such deposits within easy access of the large consuming and export markets furnish the very strongest attractions, while to the trade itself they offer precisely the practical desideratum of the present situation.

In publishing the article on "Blast Furnace Averages" in our last issue, embodying the interesting and valuable figures compiled by Mr. Edward J. Hale, C. E., of Buffalo, we omitted to mention that the tables related only to anthracite furnaces. We think this was understood by a majority of our readers, for the reason that all the examples given are of anthracite furnaces. As it is possible that some have supposed them to relate to all kinds of furnaces, and have derived, in consequence, an erroneous impression of the progress and present condition of American iron making, we take this opportunity of setting them right.

The British Production of Metals from Native Ores.

The official annual statement of the Keeper of Mining Records of the United Kingdom for 1873, as compared with the preceding year, has just come to hand. According to this, the amount of metals produced from native ores was the following:

	1872. Ore raised. Tons.	Metals obtained. Tons.	Value.	1873. Ore raised. Tons.	Metals obtained. Tons.	Value.
Copper	91,983	5,703	£583,232	80,189	5,240	£502,822
Tin	14,266	9,560	1,450,990	14,885	9,972	1,329,766
Lead	85,968	60,455	1,209,114	73,501	54,255	1,268,375
Spelter	18,543	5,191	118,076	15,969	4,471	120,099
	208,760	80,909	£3,370,412	184,544	73,918	£3,216,062

The assumed value of the metals of last year's production was, therefore, the following: Copper, £96 per ton; tin, £133; Lead, £23, and Spelter, £27.

It will be seen that the decrease in the amount of pure copper obtained was but 463 tons, or 8 per cent., while there was an increase in tin of 412 tons, or about 4 per cent. A more striking decrease took place in lead, the falling off being no less than 6220 tons, or upward of 10 per cent.; but the most remarkable falling off was in spelter, which declined 720 tons, or about 14 per cent.

The panic reached England too late last year to have influenced production; the Spanish revolution was in full swing at the time, and it is fair to presume that the reduction of lead ore was going on with the utmost vigor. Hence the decrease deserves all the more notice. The years 1864 to 1868 inclusive will best answer the purpose of demonstrating the decline of production of lead from native ores in England:

	Ore raised. Tons.	Metal obtained. Tons.
1864	100,773	71,562
1865	96,494	71,743
866	97,133	71,893
867	99,573	73,013
868	101,596	75,761

Average amount of lead obtained during the five years, 72,800. According to other contemporaneous authority the average was 68,236; we shall, therefore, be safe in

putting it down as having been 70,000, as against 54,000 last year.

European production in normal times stood during the years 1864 to 1868 about as follows:

	Tons.
Great Britain	70,000
Spain	67,000
France (mostly Spanish)	17,000
Germany	49,000
Sardinia	23,000
Belgium	10,000
Greece	8,000
Austria	8,000
Russia	1,200
Sweden	300
Total	253,500

The present English decrease would therefore constitute something like 6 per cent. of the entire annual European production as it was at the time.

Even supposing, then, that with the exception of Spain, the remaining European nations have gone on producing as much as they did then, the English deficiency, in conjunction with the Spanish decrease, sufficiently explains the chronic scarcity of lead at the leading centers.

Turning to spelter, we find that Europe produced, in 1870, the following quantities:

	Tons.	
Germany in Silesia	39,000	
" in the Rhenish Provinces	11,000	
		50,000
Belgium, Vieille Montagne	35,200	
Remainder of Belgium	9,500	
		44,700
England		7,500
Russia		3,000
Austria		2,000
Spain		1,500
France		500
Total		109,200

The English deficiency of 3000 tons consequently constitutes a total decline of production of nearly 2⅞ per cent., which may be called trifling, the more so as we have been increasing in yield here, and use that much less of European spelter.

The slight decrease in copper for the year is of little account, but the general decrease in England in this metal deserves a passing notice, inasmuch as twenty years ago England produced something like 23,000 tons annually, and has been steadily receding since.

The excess in tin goes to swell the steadily augmenting production within the British dominions which is taking place in Australia, and is not calculated to cause surprise.

It now remains to be seen how our own production of the three leading metals compares with England's for the year 1873:

AMERICAN PRODUCTION IN 1873

Metals obtained.	Tons.		Value.
Copper	15,000	£96	£1,440,000
Lead	29,000	23	667,000
Spelter	6,743	27	182,061
			£2,289,061

We have shown that England produced:

Copper	£502,822
Lead	1,263,375
Spelter	120,099
	£1,886,296

We have, consequently, according to the English standard of value, turned out £402,765 more than the amount produced from the three metals combined, in England, from native ores.

The picture thus presented is one of high promise, and well calculated to stimulate American enterprise in this branch of our national industry. While in Europe and Chili we perceive a decreased production of the three metals last alluded to, our own progress has been steadfast, even in times of general depression. We are, therefore, permitted to hope that under favorable circumstances we may frequently be able to furnish a supply abroad, whenever serious deficiencies arise, after attending to our own requirements. Until now we have been confined to exporting some copper, but the day may not be distant when we shall be exporters of lead, and even spelter.

As might have been expected, the idle puddlers at Pittsburgh are resorting to violence as a means of enforcing submission on the part of non-unionists who are willing to work for the wages offered by the employers. Where threats have failed to intimidate, the obdurate non-unionists have been set upon and beaten—in one or two instances so severely as to endanger life. The men openly and derisively defy the local authorities, who dare not interfere, they say. By these means they deter a great many men from filling their places who would otherwise gladly do so. We are glad to learn that the manufacturers have decided that if the authorities cannot keep the peace and protect their employes, they will adopt measures to do so. When outrages are perpetrated so openly and with such avowed contempt of the law, it is time something was done to repress them. Manufacturers should, in every instance, lodge complaints with the proper authorities against those who are guilty of violence, and should in every instance prosecute the offenders without mercy. They owe this to themselves, to the community, and especially to the workingmen in their employ, who are practically powerless to help themselves. We do not believe that the authorities of Pittsburgh are either unable or unwilling to maintain order and protect life and property, but they cannot do so without the active co-operation of those most interested.

A remarkable instance of the far-reaching power of the trade unions for mischief, is found in the fact that the puddlers of the Shenango Valley have given notice that they will strike in case any more shipments of muck bar are made to Pittsburgh mills, and that one mill is already stopped in consequence of the refusal of the owners to heed this menace. If some means cannot be found of protecting capital against organized tyranny of this kind, we may expect to see millions of dollars withdrawn from manufacturing operations within the next few years, as well as millions more sunk beyond recovery in unprofitable manufacturing investments. The only way we see of averting such a disaster is for employers to take advantage of the opportunity now offered to emancipate themselves from trade union control, by refusing to employ any man who belongs to a union, and who will not pledge himself not to join one so long as he remains at work and receives wages.

New Publications.

Tables for the determination of minerals, by those physical properties ascertainable by the aid of such simple instruments as every student in the field should have with him. Translated from the German of Weisbach, enlarged, etc., by Persefor Frazer, Jr., A.M. Philadelphia: J. B. Lippincott & Co.

This is a very convenient and useful little volume, which will be found of much assistance to the student of mineralogy, and handy for reference by all who have any interest in the science to which it relates. Weisbach has divided the minerals into three tabular systems, the first embracing those of metallic lustre; the second, those of non-metallic lustre which give a colored powder; the third, minerals of non-metallic lustre and colorless streak. In the tables which compose the subdivisions of these systems, the minerals are arranged according to their hardness, beginning with those which are softest. Prof. Frazer has endeavored to carry out the plan of the author as fully as possible, but he has found it necessary to make several changes which are calculated to better adapt it to the American public. Among other changes we notice the addition of a column of chemical formulas, which have always been essential to the completeness of Weisbach's tables. The formulas represent the most modern of the atomic theories, and those who have learned the system of Berselius only, will find them difficult to comprehend—if not wholly unintelligible. It is to be regretted that the printer has found it necessary to substitute dashes for the plain Roman 1, which makes all the diatomic hexad molecules, as the translator says in his preface, "look somewhat as if they were ashamed of themselves and were trying to withdraw." The little book is of convenient size and will fill a want.

The Bell-Whitwell Dinner.

In our issue of last week we gave a brief account of the dinner given by the American Iron and Steel Association to Messrs. I. Lowthian Bell and Thomas Whitwell. The following are the principal addresses of the evening, which we were unable to give at that time:

ADDRESS OF WELCOME BY HON. ABRAHAM S. HEWITT.

MR. PRESIDENT AND GENTLEMEN: Entirely satisfied as you must be after this bountiful repast with all things here below, unless it be the price of iron, I am nevertheless quite sure that you would be ill content with me if I were to defer for one moment the words of welcome to our cheri-hed guests, Mr. I. Lowthian Bell and Mr. Thomas Whitwell, which spring unbidden from the heart of every member of this goodly company of their fellow iron masters, assembled to do them honor, and to assure them of our profound respect and hearty good will. I will not attempt to disguise from them, as they surely will not disguise from themselves, that this assemblage is of no common character and implies no ordinary compliment. They are to-night the honored guests of the whole American iron trade, and we rejoice that this opportunity is afforded to us to testify the high estimation in which they are held, and through them to acknowledge the great debt of gratitude which we in common with all the world owe to the land which gave them birth, for its numerous and inestimable contributions to the development of the production of iron in modern times.

We honor Mr. Bell because he has done so much to make the iron business honorable. The son of an iron master, he inherited a position in the trade which might have satisfied his ambition without any special effort for its improvement; but from his early youth he carefully prepared himself for the intelligent administration of a great business by scientific training at the best schools, and by patient investigation of the principles which underlie the intricate processes of manufacture. Fortunately, perhaps, for himself and the world, his career has been identified with the most marvelous growth of productive industry, that of the Cleveland iron region, of which history affords us any knowledge; and to this development he has largely contributed by his intelligence, his scientific training, and his rare powers of patient investigation. By these labors he has fairly won for himself the highest position which, in our special department of industry, can be attained by any man, that of president of the British Iron and Steel Institute, the most enlightened and powerful organization for the advancement of a purely industrial interest which any nation has yet devised. In the course of his labors he has instituted an exhaustive series of experiments upon the operations of the blast furnace and its chemical phenomena, the results of which he has embodied in an elaborate treatise, which is justly regarded as the most valuable contribution in our day made to the laws governing the smelting of iron; and leaving but little to be done in that direction by future investigators. While his successful acquisition of knowledge, and the practical skill with which he has applied it to useful purposes, would entitle Mr. Bell to very great and deserved distinction, to us his chief merit lies in the fact that he has not kept his acquisitions to himself, or even to his own country, but has made haste to share with all the world the useful results of his labor, thus taking himself out of the category of a mere man of business, laboring for his personal advancement, and enrolling himself among the benefactors of mankind. And to Americans he has a special claim to interest, not merely that he has his home at "Washington, in the county of Durham," whence came the family of the "father of his country," but that he dispenses there a generous hospitality, which makes the patriotic pilgrim and the wandering iron master feel that they have returned to the home of their ancestors. For such deserts the welcome which we offer here to-night is indeed all too poor.

We honor Mr. Whitwell because he also demonstrates the truth, which the world has come at last to admit, that the highest science is necessary to insure the greatest economy in manufacture. His careful training as a mechanical engineer undoubtedly gave him special advantages for a successful career as an iron master. By his energy, enterprise and willingness to test fundamental principles in practice, he has contributed in a marked degree to the cheapening of the cost of iron, and has therefore entitled himself to the thanks of all who are interested in the progress of civilization throughout the world. He is, so far as we are concerned, fortunate in having identified his name with the word "stove," which in America is always associated with the pleasant memories of "home." But his true title to the respect of mankind rests upon the fact that he has taught the world how to economize fuel, and is therefore a conservator of force. His benefaction is direct and positive, and the measure of it is the number of tons of coal which will annually be saved to mankind by his invention. We might even venture upon a computation of his contribution to the wealth of this continent; but I fear that the result would be a sudden conviction on our part of the inadequacy of such honors as we pay to him to-night to discharge the obligations under which he has placed the iron industry of two continents.

To such men as Mr. Bell and Mr. Whitwell, distinguished leaders in the great army of modern industry, too much honor cannot be done; and yet, with all their personal claims to our respect and affection, it will derogate nothing from the compliment we have tried to pay them, if I say that these claims alone, strong enough as they are to open to them the home and heart of every iron master, would not of themselves have been sufficient to produce this collective and unique demonstration in their honor. To us they are more than members of the same fraternity: they are representive Englishmen, citizens of a country to which the iron trade may be said to owe, if not its existence, nearly all the great inventions and improvements which have enabled iron to be produced in quantity, and at a cost essential to the growth of society and progress of civilization. To Great Britain the world owes the application of mineral coal to the smelting of iron ores; the invention of the puddling process and of grooved rollers; the introduction of the hot blast; the steam hammer; the Bessemer process; the Siemens regenerative furnace; the Whitwell stove, the steam engine, locomotive and stationary; contributions which, taken away, would relegate the world to a condition of barbarism which the imagination refuses to contemplate.

We cheerfully recognize the primacy of England in the domain of industry; and we are justly proud that we belong to a race which, in the pursuit of material ends, has used them as the means of asserting the right of man to free government and of establishing social order upon the eternal principles of truth and justice. We recognize that, as in the world of industry, so in the domain of politics, she has taken no step backward, and we have learned from her history, which belongs equally to us, that every new invention introduced, and every just political principle established, improves the condition of the working classes, and adds to the fund available for their better remuneration. While we look with wonder on the mechanical and industrial achievements of Great Britain during the last hundred years, we feel that our admiration is rather due to the steady progress which has been made in bettering the condition of the working classes and to the increase of comfort which they now enjoy, as the result of a better application of the natural forces and wiser legislation based upon sound economical principles. The steady rise of wages, measured by their purchasing power in Great Britain, during the last quarter of a century especially, is the most encouraging feature in the history of mankind—a very rainbow of promise to the patient sons of toil throughout the world, because by comparing the past with the present the beneficent influence of sound legislation on the welfare of the working classes thus becomes a matter of absolute demonstration. The abolition of the Corn Laws I regard as the turning point in the welfare of the industrial classes throughout the world, because it was a practical recognition in its most enlightened nation that the supposed interest of special classes, even when they govern, must yield before the force of public opinion, to the just claims of the governed. The immediate result of this change in British policy was and continues to be a very decided increase in the substantial remuneration paid for daily labor.

But an advance of wages where there is no previous training for their proper use is not necessarily a benefit; and after years of experience public sentiment in Great Britain has arrived at the conclusion that the general education of the masses is essential for their steady progress toward a higher social plane. And it seems to me that the step which has been recently taken in England toward the compulsory education of the masses, in spite of the opposition of selfish interest seeking to retain their hold upon mere muscular force, to the exclusion of mental development, will add enormously to the productive value of the workingman and enable him to secure a rate of compensation justly due to such increased value. There may be those who falsely look upon a rise of wages in Great Britain, as the result of this better training, with apprehension, and who predict that the supremacy of British industry will in consequence of the improved condition of the working classes pass away; but it is to the honor of William E. Forster, whose presence here we hoped to have to-night, that with the true instincts of a statesman, such as he exhibited when he was the eloquent champion of the American Union in the time of its peril, he was able to discern in the history of British legislation in its effects upon British industry the fundamental law that labor is productive in proportion to its intelligence, and that no more certain means could be devised for perpetuating the supremacy of Great Britain over other nations than by securing for the masses of the people a better education and a higher culture.

For the same reason the establishment of the British Iron and Steel Institute marks a new era in the international history of industry. While it is true, as Mr. Bell justly remarked in his presidential address at Liege, "that art and science recognize no geographical or political boundary," it is equally true that prior to the formation of the Institute the "secrets of the trade," as they were called, were jealously guarded, and access to works where special processes were carried on was extremely difficult, and often impossible, as well to foreigners as to natives. For the first time in the history of industry, the accomplished leaders of a great trade associated themselves together, not merely for the purpose of instructing each other in their special departments, of comparing experience, and of gathering together the latest discoveries in science and art for mutual benefit, but, with a liberality never before evinced, except by scientific bodies, and which can not be too highly commended, all the world was made free to partake of the advantages of this organization, so characteristic of the catholic spirit which happily is beginning to mark our age. The beneficial results of this wise policy are already apparent in the general introduction throughout Great Britian of the best machinery and the most economical processes, whereby the cost of producing iron has been cheapened, alike benefiting the consumer and increasing the ability to pay better wages to the operatives engaged in its production.

Not inferior in importance to the general advance in the British iron trade resulting from the establishment of the Iron and Steel Institute is the introduction and successful establishment in England of the principle of arbitration for the settlement of disputes between the employer and the employed as to rates of wages. While it can not yet be said that the disastrous consequences resulting from strikes have been altogether averted, every intelligent man now sees that their occurrence is rendered more difficult, and that the good understanding between masters and men, so indispensable to the successful conduct of business, must be greatly promoted by the discussions and evidence which the contending parties are bound to have before an impartial umpire. Arbitration not only pours oil upon the troubled waters of industry, but in fact *is* oil to the machinery of trade, keeping it in motion without jarring and stoppage from unnecessary friction. When the working classes come clearly to understand how the fund available for the payment of wages is lessened by strikes and locks-outs, they will regard them as the greatest evils of the age, and, in this and every country where they enjoy the right of suffrage, will insist that the principle of arbitration in trade disputes shall be incorporated into the legislation of all industrial countries, and thus relieve themselves and the community from the dreadful suffering and irreparable losses resulting from any protracted stoppage of the machinery of production.

Great Britain also has the merit of having originated international exhibitions of industry, which, in the judgment of all intelligent men, have done more for the rapid progress of civilization than any other human agency; and for the working classes especially have been of incalculable benefit, not merely in the enlargement of their ideas and the development of their tastes, but in patiently gathering together the facts which affect their social condition; the rates of wages paid in different countries; the elementary means of education adapted to their wants; the dwellings in which they are, as compared with those in which they should be, housed; the varieties of food and the methods of its preparation; all of which have exerted an influence throughout Europe, and especially in Great Britain, which no lover of his race can overlook, and no statesman can afford to disregard. We are now about to avail ourselves of this grand humanitarian idea in our own country, and we are glad to learn by the cable to-day that Great Britain will take part in our exhibition in 1876, the result of which must be the increase of national good will and an exchange of ideas which cannot fail to advance the interests of labor on both sides of the Atlantic.

In this connection there is another phase of recent industrial development in England, as well as in this country, which should attract the notice of all thoughtful men, in its bearing upon the question of the economy of production, and the consequent augmentation of the wages fund. I refer to the steady growth in the size and completeness of the establishments devoted to the production of iron, and, from the magnitude of the capital necessarily employed, their consequent transfer from individual to corporate ownership. Without entering into the question of the comparative advantage of these respective kinds of proprietorship, I desire to direct special attention to the facility which these corporate bodies offer for interesting the workmen directly in the ownership and profits of the business; which, if generally availed of, must result in the final extinction of strikes and labor disputes, and thereby largely increase the earnings of the working classes, measured not by the day, but by the lifetime, and improve their moral and social standing. Now, Great Britain, in her corporate manufacturing companies, such as Crossley's, and in her legislation, which makes legal provision for "Partnership of Industry," has set us an example of wise foresight, which we have, I confess, been slower to follow than could have been anticipated, but possibly to be accounted for by the fact that these fine adjustments of conflicting interests are more necessary and feasible in older and more densely populated countries than in a new world like ours, where, as yet, the forces of nature have been appropriated only to a moderate extent. Nevertheless the example is before us, and we recognize that to us Great Britain is a great free school of industry, in which have been wrought out for us without cost the wisest institutions, the most complete machinery, the best processes, and the most advanced organizations for the conduct of industry, which the experience of a free and enlightened nation overflowing with capital and energy has been able to elaborate.

You, gentlemen, and our distinguished guests will, I am sure, pardon this enumeration of the phases of industrial and social progress, especially apparent in the British iron trade, in view of the supreme importance to us here of the question of wages, and, above all, of the ability of Great Britain to pay a steadily increasing rate of wages, an ability which she is thus surely augmenting by the discoveries of her men of science and the inventions of her mechanics, by her wise and progressive legislation, looking to the future education and moral elevation of her working classes, to the settlement of all trade disputes, and to the reconstruction of her industry on the enduring basis of practical harmony between labor and capital. Every step in this direction is a benefaction to the United States, as well as to Great Britain, and drives another nail into the coffin of international restrictive legislation; and no one will hail with more enthusiasm than this body of American iron masters and their distinguished guests the advent of the day when all barriers to free commercial intercourse between the nations can be safely removed, by the equalization of the wages of industry which the enlightened statesmen and scientists of Great Britain have done, and are doing, so much to bring about.

And this beneficent result cannot come too soon for the interest of the world at large. Although the business of making iron is everywhere passing through a stage of great stagnation, yet its future growth can be predicted to almost the same certainty as we have learned to calculate the orbits of the heavenly bodies. In 1856, when the annual production of the world was about 7,000,000 tons, after a careful investigation I ventured to predict that the production of iron would reach 14,000,000 of tons in 1875. This limit was passed last year, when the product reached 15,000,000 of tons. I do not think that I risk my character as a prophet when I indulge the belief that by the close of the present century twenty-five millions of tons per annum will be required to supply the wants of man. There are gentlemen in this room who will live to see this prediction verified, for it covers only the life of a single generation. Great Britain in 1856 furnished one-half the annual supply, and she has been able to maintain this ratio till the present time. But even Mr. Bell and Mr. Whitwell, with all their natural confidence in the resources of the mother country, will admit they will be tasked to the utmost to keep up with the increasing demand for iron, at its inevitable rate of progress, when the total aggregate shall go beyond twenty millions of tons. Between Great Britain and ourselves, therefore, all possibility of rivalry must in the very nature of things soon pass away, and we shall then behold the magnificent spectacle of the two greatest and freest nations in the world co-operating together for the extinction of ignorance, pauperism and crime, and the elevation of the working classes throughout the world to that condition of comfort and intelligence to which they have a just claim, and which no political system can deny without laying the foundation of its own ruin.

We have a common language; we inherit from England our common law and a priceless literature; we have governments based upon the same political rights of man and the equality of all men before the law; we have the same social customs and standards, and the same love of home and the sanctity of the family relations; we have the same great end in view in the amelioration and enlightenment of the working classes; and, as if to provide us with the means of the speedy accomplishment of the hopes of all good men, we have, in the main, the control of that great fund of wealth and power which has been stored up in the coal fields, and which is the key to the progress of civilization and the improvement in the condition of mankind. We are, in fact, but one family, endowed with the same training, occupied in the same pursuits and aspirations, and blessed with the same moral and material resources. We are working to a common end, and by the unchangeable laws of nature we can work to no other; and hence it is impossible for any intelligent man not to see that the laws which govern production, distribution, wages and profit must sooner or later operate with absolute equality and freedom between the two nations—if not between the continents; and hence whoever is engaged in the promotion of this desirable result, whoever hastens its advent by a single day, is the benefactor of this country, and should be its welcome guest.

Hence, Mr. Bell and Mr. Whitwell, we justify to ourselves, aside from personal grounds, this exceptional demonstration in your honor. You stand here to-night as representatives of England, our motherland, fruitful now as of old in good works and good examples, ever progressive in the development and application of the eternal principles of truth and justice; striving still as in the days of King John and Charles the First, and James the Second, to elevate the masses of the people to a better condition—foremost in the march of industry and civilization; and by the ties of blood and race, and in the possession of the joint estate of the coal and iron of the world, partners inseparable with us in the future benefactions to mankind which nature has put it in our power to confer.

Although commanded to speak words of "welcome," Mr. Bell and Mr. Whitwell, I am but too well aware that they are in reality the language of "farewell." Hence I have refrained from referring to the special facts of our development in the manufacture of iron, which you have both carefully studied; and in regard to which you will doubtless express your judgment at the proper time. We might regret, perhaps, that your visit has found us in such depression; perhaps it may be more justly said in the throes of a new birth; but it has at least this advantage, that you see the old passing away and a new era of science and mechanical excellence fairly inaugurated. For the first time in our history, we have a capacity for producing iron in quantity adequate to our consumption in a normal state of affairs, and when the old are fully adjusted to the new conditions under which alone iron can be profitably produced, you will, I am sure, agree with me in one assertion, that it is the "manifest destiny" of this country to be the seat of an iron growth on a larger scale than the world has yet witnessed.

Gentlemen, in behalf of the American Iron and Steel Association, which has honored me with this privilege, because, probably more than any other of its members, I have enjoyed the boundless hospitality of the British iron masters, I bid you "welcome and farewell," only in the hope that we shall be honored at our Centennial in 1876 with the promised presence of the British Iron and Steel Institute, of which you, Mr. Bell, are the distinguished president, and you, Mr. Whitwell, are so eminent an associate.

Mr. Reeves proposed the health of the distinguished guests.

MR. BELL'S REPLY.

MR. PRESIDENT AND GENTLEMEN: I question whether any gentleman comes, under circumstances similar to these under which I am placed, with a deeper sense of his inability to do justice to himself after the language you have just listened to, which has fallen from the lips of my friend, Mr. Hewitt. I have just returned, as has been alluded to by my friend, from a highly interesting, and I may say instructive, visit through your mining districts, and when I reflect upon the nature of my reception, and remember the sacrifices made by these gentlemen who so kindly received me, I confess myself utterly at a loss to discharge the duty incumbent upon me. I feel at the present moment a deep sense of the imperfect manner in which I have expressed to those gentlemen who so kindly received me my gratitude for their overflowing hospitality. When I find that friendly reception supplemented, as it has been upon the present occasion, by the presence at this hospitable gathering of so many men distinguished in the iron trade, my embarrassment is still further hightened. I am fully aware that I owe this cordial reception, in a great measure, to the fact that I am, for the present time, at all events, the humble representative of the iron and steel interests of Great Britain. Nevertheless, I cannot refrain from attaching to myself a little of the language with which Mr. Hewitt has been so kind as to address me. I shall carry the recollection of that language, and cherish the manner in which it has been received by this company, as a remembrance of the friendly feeling with which this occasion has inspired you this evening.

Now, sir, after making these general remarks on personal grounds, I may be permitted to express the opinion that the iron and steel interests of Great Britain have deserved some recognition at the hands of the iron manufacturers of the world. As Mr. Hewitt has told you, she has been the first to break down the barriers of reserve and silence which were utterly useless, and she has done that in the belief that, however able an individual might be, and however successful he may have been as an iron master, we all had more to learn than it was in the power of any one individual to teach. And also, sir, we may claim some merit in having been among the first in insisting in our capacity as iron masters upon the importance of the cultivation of science in the manufacture of the iron to which these gentlemen devote their lives. It is not difficult to see how science in this matter has been for our benefit. It was well known by all of us, by yourselves, that science took but little part in advancing the metallurgy of iron. But if you allow yourselves to recall the history of the introduction of every great invention with reference to that trade, you will agree that that invention was retarded by the want of scientific truth at that time; for example, as mentioned by Mr. Hewitt, the substitution of mineral coal for charcoal in the blast furnaces. You will remember the numerous frivolous objections to

the introduction of the hot blast, and you will remember the difficulties encountered in the introduction of Bessemer steel; in the process for the decarbonization of iron the product as it came from the converter was found to be useless; the labors of the old German chemists were disentombed, and the advantages supposed to be conferred upon steel were followed up by my friend, Josiah Marshall Hill, and society has now placed at its disposal one of the most important inventions of the present time, the manufacture of Bessemer steel. It is idle for me, in the presence of American gentlemen, to insist upon the importance of science in this or any other manufacture. You have among yourselves illustrious citizens, who, seeing things advance, have taken time by the forelock. Not alone in the United States of America is the honored name of Peter Cooper revered. We know full well how this institution of his has raised America in the scale of scientific nations—an example followed by others, for I have found at every step, in going through the land, scientific institutions arising; and I remember the labors of my friends, Mr. Pardee and Mr. Packer.

You have alluded to the possibility of my friend and myself making known our impressions as to the present position and prospects of the iron trade of this country. I accept the challenge, and at the proper time, if my health be spared to me, will make known the general scope of my opinion on that subject.

You are doubtless aware—for it is no new story—that the position of England has been compared unfavorably with that of other nations in the manufacture of that metal with which it is our good fortune, notwithstanding the present condition of affairs, to be associated. As you very property have alluded to some of the more brilliant inventions which have made Great Britian illustrious in the manufacture of iron, I would not hesitate for one moment, were the verdict to be taken by any intelligent and well-educated portion of the community either on this side of the water or the other. The very fact of these persons being unjust to us is unfair to our colleagues; for, it can not be supposed possible that a nation however brilliant could monopolize that trade. It would speak ill for you, as well as for our colleagues in France and Germany, if we were to be monopolists even with our natural advantages. I am also willing to admit, as a matter almost of course, that some of the later inventions, some of the most important, have been introduced by our colleagues on both sides of the Atlantic, outside of England. I am bound to say that, while in one branch—I refer to the blast furnace—every nation, if she is to be in the van, will have to look to England for an example of what is to be done in that direction. There my praise of my country must end, and I must say that in my progress through this country I have seen things which my own country will do well to copy. I refer in particular to the manufacture of Bessemer steel. I see in this company one or two gentlemen who have largely contributed to that result—Mr. Fritz and Mr. Holley.

Some of the more delicate topics Mr. Hewitt has referred to, I may be excused from entering upon. Of one thing I am convinced: anything for the good of mankind generally will happen; when that is to come it is well for me not to say. Now, sir, when the day shall come that Great Britain is exhausted, not by conquest, but by her mighty efforts in commerce—if that day should ever arrive—I know of no nation more worthy (because, looking out of the circumstances as they at present exist, I know of no nation so capable) of receiving upon her shoulders that mantle which Great Britain has so long and so worthily worn. It may be a mournful subject for me to contemplate, but that mantle will be worn by the legitimate wearer, I mean our brethren in the United States.

And now, sir, in conclusion, I would thank you, as I do from the bottom of my heart, not only for the reception at the hands of my brethren, the iron masters, but for the high terms in which, in American society in general, England and her people are invariably mentioned. I look with pain upon my departure from this country, notwithstanding the pleasure natural to my return to my native country. In spite of those feelings I do not know that I ever took leave of any nation with such feelings of regret as those with which I shall leave the shores of the United States. I can only say, sir, that in the year 1876 I hope that circumstances will permit my return to this country in order to allow me the opportunity of supplementing these imperfect remarks in the vain endeavor to impress upon you my deep gratitude for the kindness with which you have greeted me upon this occasion.

Mr. Reeves proposed the next toast: The health of Mr. Thomas Whitwell.

MR. WHITWELL'S REPLY.

MR. PRESIDENT AND GENTLEMEN: If I have not the faculty of making anything like an adequate response to the terms of the cordial welcome with which you have greeted me, it is because I have not the power. I feel like George Stephenson—with whose son I served my apprenticeship—who, at a large party at his house, being crowded into a hard place to make a speech, called upon one of his friends to take his place as he had not "the gift o' the gab." You must excuse me if my remarks do not convey all they ought to convey for the cordial manner in which I have been received here this night and everywhere throughout your great country. It has been my good pleasure to go through the country and observe everything. I came and saw the thoroughness with which everything is undertaken in the United States. Beginning in Canada, on our side the frontier, passing by the Falls on to Chicago, the Iron Mountain, the banks of the Ohio, through Western Virginia, the Lehigh Valley, Tennessee and Georgia, and so back into Philadelphia, it has been a great treat, the greatest treat that ever I had in my life, to see the signs of progress and advancement which everywhere met my gaze.

Among other things which struck me in regard to thoroughness were your fire departments, which I visited in every town to which it has been my lot to come. In New York, Cincinnati, Cleveland, Troy, Philadelphia, and other cities, I have seen what I have heard of—I have seen how in 10, 13 or 14 seconds, men and horses trained to the highest point of perfection have been brought out to meet the exigencies of a great conflagration. It reflects great credit upon the United States, and it is one thing in which the old country is immeasurably behind. In going further there is another subject to look at, the American system of reformatories and jails. When I came to America and saw ladies and gentlemen going regularly to the jails to visit the prisoners, and compared that with the utter indifference with which criminals are regarded in our own country, no one visiting them with the exception of the chaplain, I thought that England has a great deal to learn and a great deal to copy to her own social advantage in the United States. Another thing in going through the country I have noted with a great deal of pleasure. A great lack in England is in the technical education among our mining engineers. With us if a young fellow wants to study engineering he goes at the age of 18 into a factory and works in the shops from six to six, picking up anything he can learn, and trusting to his evenings to study upon scientific subjects. But when the evenings come, and he is tired out with his work, he is not likely to go into Euclid and mathematics. Here your mechanics go into the colleges, in such places as Easton, Bethlehem and elsewhere, and leave no stone unturned to thoroughly fit themselves as technical engineers.

Now I am not likely to write a book. My good friend, I think, is more likely than I; I leave him to express his matured opinions in regard to this country. In traveling over your great country and seeing that our little country—that part of it known as Great Britain—can be put into Pennsylvania and New York, I perceive what an immense future there is for your land, stretching from the shores of the Atlantic to the shores of the Pacific. I cannot help being struck with the immense resources at its disposal. You have gone ahead of Great Britain, not by natural growth, but here have come thousands, the overflowing from the old country and from all parts of the world. This country with its boundless stores of iron, copper, tin and lead, not to mention the precious metals, has an immense future before it. With a population now exceeding forty millions I see a vista that will reach four hundred millions; then indeed will your country be the greatest in the world. Other countries may have the largest population, but no country is better fitted in all its aspects to be the greatest empire in the world than the United States of America. Allow me again to thank you most heartily for the very cordial manner in which my name has been received, and to disclaim the flattering words of your friend, Mr. Hewitt.

Addresses followed by Messrs. F. B. Gowan, Thos. A. Scott, A. L. Holley, Gen. J. K. Moorhead, Prof. J. P. Lesley, Hon. Wm. Bigler, Gen. Robt. Patterson, Hon. Daniel J. Morrell, Joseph Wharton, Hon. Morton McMichael, and Prof. R. W. Raymond.

Japanese Alloys.

S. Kalischer has made an analysis for the Industrial Museum, at Berlin, of four Japanese alloys, with the following results:

	I. Per cent.	II. Per cent.
Gold	4·16	0·12
Silver	0·08	48·93
Copper	95·77	51·10
	100·01	100·15
	III.	IV.
Tin	4·38	4·36
Lead	11·68	12·29
Copper	76·60	76·53
Zinc	6·53	6·58
Iron	0·47	0·33
	99·96	100·09

The first, which contained much gold, had a light, red color with a bluish black, lustrous patina on one side. The second, which contained silver, had a gray, almost silver white color, with a slight shade of yellow. The two last, III and IV, resembled our brass in color, and were as the figures show, identical, and represented a peculiar kind of bronze. Externally they are exactly alike, except that one had a fine crust on one side which gave it a duller look than the metal itself. They differ from our bronzes in having so much lead in them, and the amount of zinc in the latter is generally much less, and only seldom higher.

H. Morin has recently published the analysis of some Chinese and Japanese bronzes exhibited at Paris in 1867. Like III and IV above, they are distinguished by the large percentage of lead, which he found to vary between 9·9 and 20·31 per cent., while the zinc fluctuated from between 0·5 and 6·0 per cent. To the large amount of lead, Morin attributes the black patina, which mostly characterizes these bronzes. Cristofle and Bouilhet, on the one hand, confirm this view, and, on the other, prove that patina of different colors may be produced by chemical means, without having recourse to bronzes containing a large quantity of lead, which, as Morin himself states, is difficult to use on account of their brittleness.

Morin's analyses show that in other respects the bronzes he examined bear no relation to those analyzed by Kalischer. In 1866, R. Pumpelly published the composition of a number of Japanese alloys, which showed the greatest conformity with the above, especially the two first mentioned. A native worker in metals allowed Pumpelly a glance into the preparation of metals, which is generally kept secret, and he described, under the name of *Makdo*, alloys of copper and gold, in which the quantity of gold varied from one to ten per cent. They have a bluish-black patina which is produced by boiling the metal, or the object made of it, in a solution of sulphate of copper, alum and verdigris, which removes some of the copper and exposes a thin film of gold. The action of light upon this produces the bluish-black color, the intensity of which increases with the quantity of gold. This group can be reckoned with alloy I above.

Gin-shi-bu-ichi is an alloy of silver and copper in which the amount of silver varies between 30 and 50 per cent. When boiled in the above solution the alloy acquires a gray color much admired by the Japanese. Alloy II belongs to this group.

The name of *karakane* is given to a sort of bell metal consisting of copper, zinc, tin and lead, and having some resemblance to alloys III and IV.

Loss of the Steamship Japan.

The Pacific Mail Steamship Company report another addition to their long list of casualties in the loss of the Japan by fire near Hong Kong. The Japan was a three-masted bark-rigged vessel, built by Wm. H. Webb, at Greenpoint, L. I., and was 362 feet in length, 50 feet in width, 31 feet in depth, and 20 feet draught. Her frame was built of white oak, with galvanized iron fastenings, and iron strapped on the frames; pattern old style, her engine being constructed with a walking-beam. The steamer was technically three-decked, and had a tonnage, full measurement, of 4352 tons, of which 1450 tons were used up by her coal bunkers, and 2100 devoted to freight. The cabin accommodated 150 passengers, and 1200 steerage passengers could be stowed between decks, though she has never carried this number. The steamer was rated at Lloyds as A1½, but was very slow, not making more than six or eight knots an hour. She was worth at the time of her loss about $150,000, for which amount she is insured in English and French companies. She was one of five ships built by the Company in 1867, at an aggregate cost of $6,000,000, to ply on the China and Japan branch of the service. Only two of these steamers are now running. These are the Great Republic and the China. The America was burned, and the Alaska was on the rocks—if she is not there yet. These steamers were very costly, as they burned large quantities of coal and carried correspondingly smaller amounts of freight. The company has lost the following vessels since 1852:

San Francisco, overloaded and foundered at sea in 1853; 200 lives lost.

Golden Gate, burned in 1862; 180 lives lost.

Hermann, wrecked in 1868, with 120 Japanese soldiers, who, at the moment of sinking, formed in line on deck and met their fate with heroic firmness and military precision.

Bienville, burned some years later, and a number of lives lost.

Golden City, wrecked, but lives, treasure and baggage saved.

America, sister ship of Japan, burned in 1872 at Yokohama; 27 Chinamen lost.

Sacramento, wrecked in 1872; lives, treasure and baggage saved.

Ariel, wrecked in 1873.

Relief, wrecked on a reef in 1874.

Guatemala, lost on Walling's Island.

Japan, the tenth and last vessel lost.

There have been innumerable minor accidents, the latest of which was the breaking of the blades of the City of Peking, the stranding of the Alaska, and on Saturday the breaking of the shaft of the Colon while lying at this port.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Dec. 23, 1874.

The past week has witnessed a considerable revival of speculative activity in Wall street, and the stock exchange has been kept in a fever of excitement by the wide fluctuations in shares. The developments in the Pacific Mail investigation, and the introduction of a bill in the Senate to resume specie payments on the 1st of January, 1879, were the exciting causes, aided by reckless speculation on the part of a broker, who bought 16,200 shares of Wabash, without the means of making good his purchases, and was promptly dismissed from the board. The principal dealings in the stock market have been in Wabash, Pacific Mail, Western Union, Lake Shore, Erie and Union Pacific.

The money market continues easy, with money to loan in good supply. Borrowers on call have been freely accommodated at 3½ @ 5 per cent., and good commercial paper has been discounted at 6 @ 8 per cent. The changes in the bank averages during the week are not capable of satisfactory explanation. The result is that there has been a reduction in total reserve of $2,137,900, and a reduction in liabilities of $2,700,000. The banks now hold in lawful money $7,624,250 above the legal requirement, against $9,087,100 so held last week. The following is a comparison of the averages of the past two weeks:

	Dec. 12.	Dec. 19.	Differences.
Loans	$284,903,300	$285,409,800 Inc.	$506,500
Specie	14,218,800	13,619,500 Dec.	599,300
Leg. Ten.	49,470,300	47,931,700 Dec.	1,538,600
Deposits	218,428,000	215,707,800 Dec.	2,700,200
Circulation	24,804,300	24,731,600 Dec.	72,700

The gold market has been very steady throughout the week. The following shows the extreme daily range of the premium:

	Highest.	Lowest.
Thursday	111⅛	111⅛
Friday	111⅛	111⅛
Saturday	111⅛	111⅛
Monday	111⅛	111⅛
Tuesday	111⅛	111⅛
Wednesday	111⅛	111⅛

Government bonds continue strong, but without feature of special interest. State bonds are dull but steady; railway mortgages are, in the main, strong. The closing quotations of governments, and the highest and lowest prices of active stocks to-day, are given below.

The following tables show the movements in foreign trade for the week:

IMPORTS.

	1872.	1873.	1874.
Total for week	$6,912,075	$5,008,951	$6,711,774
Prev. reported	407,242,757	368,978,276	370,677,886
Since Jan. 1	$414,154,832	$373,987,237	$377,389,660

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Anvils	145	$1,714
Brass goods	12	928
Bronzes	85	13,366
Chains and anchors	35	1,879
Copper		145
Cutlery	86	26,659
Guns	11	2,095
Hardware	30	1,918
Iron, pig, tons	112	2,741
Iron, sheet, tons	95	19,350
Railroad bars	96	1,067
Iron cotton ties	358	964
Iron, other, tons	378	24,464
Lead, pigs	3,898	21,462
Metal goods	126	18,362
Nails	6	314
Needles	14	8,799
Old metal		589
Platina	2	3,108
Plated ware	2	315
Per. caps	31	6,674
Saddlery	2	242
Steel	1,325	17,763
Tin, boxes	24,795	238,782
Tin, 636 slabs	44,900	9,45
Wire	262	2,671
Zinc	11,050	690

EXPORTS OF SPECIE.

Total for the week	$3,594,639
Previously reported	53,639,101
Total since January 1, 1874	$57,253,740
Same time in 1873	47,741,043
Same time in 1872	69,076,657

Government bonds closed as follows:

	Bid.	Asked.
U. S. Currency 6's	117¾	117⅞
U. S. 6s 1881, reg	117¾	117⅞
U. S. 6s, 1881, cou	121¼	121⅜
U. S. 1862, 5-20 reg	113⅜	113¾
U. S. 5-20 1862, cou	113⅝	113¾
U. S. 5-20 1864, reg	115	115¼
U. S. 5-20 1864, con	115¼	115⅜
U. S. 5-20 1865, reg	117	117¼
U. S. 5-20 1865, cou	117¼	117⅜
U. S. 5-20 1865, reg. new	116⅛	116¼
U. S. 5-20 1865, cou	120	120⅛
U. S. 5-20 1867, reg	117¼	117⅜
U. S. 5-20 1867, cou	121	121⅛
U. S. 5-20 1868, reg	117½	117⅝
U. S. 5-20 1868, cou	121⅛	121⅛
U. S. 10-40 reg	113¾	114¼
U. S. 10-40 cou	114¾	114¾
U. S. 5s, 1881, reg	113	113¼
U. S. 5s, 1881, cou	113¼	113¼

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	101	100¾
Lake Shore	81	80
Rock Island	101¾	101¼
New Jersey Central	108	108
Michigan Central	81	80¾
Illinois Central	98¾	98½
Wabash	24⅛	23¾
Harlem	127½	127½
Western Union Telegraph	80¾	79¾
At. & Pacific Telegrahh	18¾	18¾
Northwestern	46¾	45¾
" Pref	60¾	60
Milwaukee & St. Paul	37¼	36½
" " Pref	57½	56½
Pacific Mail	37¼	36
Erie	27¼	26½
Ohio & Mississippi	31¼	30⅞
Union Pacific	35¾	34¾
C., C. & Ind. Central	9¾	9¼
Quicksilver	34¾	34½
American Mer. Union Express	63	62
United States Express	63	63

GENERAL HARDWARE.

There is very little of importance transpiring in Hardware circles. We hear of trifling changes in contemplation for the coming season. Some of our city houses report a fair demand, but no general activity exists or could reasonably be expected so near the close of the year.

There are no changes to note in the values of Foreign Hardware. The demand is very light.

The market for Nails continues much in the same condition noticed last week. Although the demand has fallen off, the tone of the market is remarkably firm. We quote 10d. at $3·50, net. Orders for 200 kegs and over could be placed at $3·40.

Trade in Plumbers' Supplies is almost at a stand still, and prices, although nominally unchanged, are in buyers' favor. The recent disaster at Haydenville, mentioned elsewhere, will not have any effect on the supply of brass goods manufactured by Hayden, Gere & Co., as their temporary works are supplied with steam power.

We have received the following, dated 24th instant:

Henry Disston & Sons desire to inform their numerous patrons that their prices and discounts for the coming season will remain as during 1874, no alteration in price list or discount having been made.

We invite the attention of the trade to the advertisement of Henry Disston & Sons, on the 25th page, in which they illustrate very comprehensively the working of Barker's Patent Double Reversible Joint Butt Hinges and Concealed Door Springs. These goods are offered to the trade at the following list, which is subject to discount 12½ per cent.:

Per Set, with Springs Complete.

No. 0, Japanned with Plated Acorn Tips and Plates, for 1 inch doors	$3·25
No. 1, Japanned with Plated Acorn Tips and Plates, for 1¼ inch doors	3·50
No. 2, Japanned with Plated Acorn Tips and Plates, for 1½ inch doors	3·75
No. 3, Japanned with Plated Acorn Tips and Plates, for 1¾ inch doors	4·50
No. 4, Japanned with Plated Acorn Tips and Plates, for 2 inch doors	5·25
No. 5, Japanned with Plated Acorn Tips and Plates, for 2¼ inch doors	6·75
No. 6 Japanned with Plated Acorn Tips and Plates, for 2½ inch doors	12·00
No. 7, Japanned with Plated Acorn Tips and Plates, for 2¾ inch doors	13·75
No. 8, Japanned with Plated Acorn Tips and Plates, for 3 inch doors	15·00
Brass Butts made to order.	

Barker's Patent Concealed Door Spring.

No. 1, Japanned, for ordinary doors...per doz.,	$3·00
No. 2, " " " "	5·50
No. 3, " heavy " "	6·00
No. 4, " " " "	6 50
No. 5, " extra heavy doors "	7·00

Trade in House Furnishing Goods is quiet. At the meeting of Tin Ware manufacturers, mentioned last week, some changes in the list of Stamped Goods were adopted. These changes we are informed, are few and trifling; the revised list is not yet issued.

Dexter & Co., No. 240 Pearl street, have issued the following list for Mica, which is subject to a discount of 20 per cent. to the trade.

Size.	Price.	Size.	Price.	Size.	Price.
2 x 3	$1 50	2¾ x 7	$4·50	4 x 5	$4·90
2 x 3½	1·75	3 x 4½	3·50	4 x 5½	5·20
2 x 4	2·20	3 x 5	4·00	4 x 6	5·50
2 x 4½	2·40	3 x 5½	4·30	4 x 6½	5·70
2 x 5	2·60	3 x 6	4·60	4 x 7	5·90
2 x 5½	2·90	3 x 6½	4·90	4 x 7½	6·10
2 x 6	3·20	3 x 7	5·20	4 x 8	6·30
2 x 6½	3·50	3 x 7½	5·40	4 x 9	6·70
2 x 7	3·80	3 x 8	5·60	5 x 6	6·30
2¼ x 3	1·60	3¼ x 4½	4·20	5 x 6½	6·50
2¼ x 3½	2·00	3¼ x 5	4·50	5 x 7	6·70
2¼ x 4	2·40	3¼ x 5½	4·80	5 x 7½	6·90
2¼ x 4½	2·80	3¼ x 6	5·10	5 x 8	7·00
2¼ x 5	3·30	3¼ x 6½	5·30	5 x 9	7·00
2¼ x 5½	3·60	3¼ x 7	5·50	6 x 7	7·00
2¼ x 6	3·90	3¼ x 7½	5·70		
2¼ x 6½	4·20	3¼ x 8	5·90	All Larger.	7·00

Buck Brothers, Millbury, Mass., have sent us the following for publication:

We wish to announce to the trade that our Plane Irons are *not rolled*, but forged, same as our Chisels. We did not think it necessary to state this in our supplementary price list, but as an agent of an English house in the same line of business has reported to a number of our customers that our Plane Irons were rolled, and, of course, could not be of as good quality as the imported Irons, we repeat, that our Plane Irons are forged, and those who wish to verify the fact are welcome to come and see for themselves. We warrant our Irons to be as good as the best imported—style, quality and finish—and we guarantee they will do the same work.

We have received the following circulars:

NEW YORK, January 1, 1875.

NOTICE.

Owing to the large increase of our business, it has become necessary for us to divide it into three departments and adopt special terms of sale for each; also to have a uniform system for the collection of accounts; therefore the following will be our terms of credit, to take effect from January 1st, 1875.

Class A will contain all articles made by us and mentioned on the first 171 pages of our catalogue of 1873, and on all the pages of our appendix No. 1, of 1874; also new articles continually coming through our works.

Class B will contain only goods made by the Branford Lock Works.

Class C will contain General Hardware mentioned on pages 172 to 574 of our catalogue of 1873, and all other articles we may sell.

Terms Net Cash.—All invoices under class A, may be settled monthly, by note, at three months from average dates thereof, without interest, except Carriage Hardware, Carpenter's Squares, Shovels and Tongs; on these and any other articles that may hereafter be put in combination, two months' interest must be added; when not in combination, all same as above.

All invoices under class B must be settled monthly, and if paid within 30 days from date, or average dates thereof, 2 per cent. may be deducted—not otherwise.

All invoices under class C must be paid within 30 days, or they will be drawn for payable 60 days from dates thereof, with 1 per cent. added for the two months' interest.

Any and all invoices required to be placed in the hands of attorneys for collection, will carry interest from date.

THE HART, BLIVEN & MEAD MANUFACTURING CO. EDWARD B. MEAD, Treasurer.

OFFICE OF THE MIDDLETOWN TOOL CO.,
MIDDLETOWN, Ct., Dec. 1, 1874.

DEAR SIR: Having given up our Agency with Messrs. George B. Curtiss & Co., we desire to inform our customers that we have made an arrangement for the sale of our goods with the Hart, Bliven & Mead Manufacturing Co., 18 and 20 Cliff street, New York, who will always have a full stock of our goods on hand at manufacturers' prices.

Soliciting a continuance of your patronage, we are, respectfully, yours,

THE MIDDLETOWN TOOL CO.

BRITISH IRON MARKET.

(*Specially reported by cable for The Iron Age.*)

WEDNESDAY, Dec. 23, 1874.

Scotch Pig.—There is little business doing, and prices are weaker. The following are makers' quotations:

Gartsherrie No. 1	91/6
Coltness No. 1	97/6
Glengarnock No. 1	92/
Eglinton No. 1	83/

Manufactured Iron.—The market continues dull, with small demand. We reduce quotations for Best Staffordshire Bars, which are now quoted £9. 10/ @ £10. 5/.

Rails.—The market is unchanged, there being no demand and prices weak and nominal.

IRON.

American Pig.—There is no material change in the condition of the market, and we continue to quote No. 1 Foundry $25 @ $26, with little or no demand. More than one company is known to be making efforts to get advances on their winter make of iron, in some cases with success, but not in all, as there seems to be a great reluctance to make advances on iron which is to remain in the custody of the makers. We hear of a sale of 1500 tons No. 1 Foundry for delivery through next year, at $25. We quote No. 2 Foundry, $23 @ $24, and Gray Forge, $21 @ $23.

Scotch Pig.—The stock here is small and the demand almost nothing. Quotations are nominally without change, as follows: Coltness, $40 @ $41; Glengarnock, $37; Eglinton, $36.

Bar.—The market is dull and without change.

Rails.—The sale of 15,000 tons Steel is reported in Chicago at a private price, understood to be about $75. Iron are $48 @ $50 at works, for American, and Welsh $47 @ $50, gold, here.

Old Rails.—There is nothing to report. We quote $27 @ $28.

Scrap.—We note the sale of 900 tons at $28. We quote $28 @ $30.

METALS.

Copper.—The market is stiffening up, and 100,000 pounds Lake sold at 23½c., cash. No sales can be reported of Baltimore; the stock is in one hand, and held at 23½c., and 24c. @ 25c. for next year's delivery. There is no Lake Copper for sale on the spot, and futures are not offered. In order to buy any of the latter, January and February would have to be paid 24c., and February to April, 24½c. @ 24¾c. London, on Friday last, stood £96 for Best Selected and £85 for Chili Bars. Telegrams are said to be in the city quoting the latter £86, but we have been unable to trace them to a reliable source. On carefully perusing the latest European reports, we find that the decline of between £3 and £4 in Chili Bars, during the fore part of December, is traceable to a variety of causes, the first of which was the raising of the discount to 6 per cent. But the metal trade had been prepared for a giving way in Chili bars by certain "bear" articles in the London *Times*, to which we alluded at the time, casting doubt upon assertions relating to the statistical position of Copper on the other side as put forward by parties interested in a further rise. Trade being apparently sound, these articles of the great London daily would have had little effect but for the attempt to set the *Times'* statisticians right. The trade papers and circulars coming out rather too strong in vague assertions, and too weak statistically, the counter arguments did more harm than good, and only served to precipitate what they intended to prevent. Added to this signal failure came the Chilean telegram advising 3200 tons charters for the second half of October, and furthermore the Chilean statistics showing an actual export of 34,000 tons from January 1 to Oct. 1, against 31,000 in 1873 and 35,000 in 1872. Apprehension was rife that the discount would rise still further, one of the causes being that banks in England and on the Continent had advanced large amounts of money on old and new vessels, which have, it would seem, vastly depreciated, and trouble being feared in consequence thereof, so many of these craft being laid up all over Europe since the stagnation in the shipping business set in. That under similar circumstances the accounts from the other side should be the reverse of sanguine, need not be wondered at. Manufactures of Copper are sustained at the following rates: New Sheathing, 28c.; Bolts and Braziers, 30c.; Bronze and Yellow Metal Sheathing, 21c. @ 22c., and Yellow Metal Bolts, 28c., net cash.

Tin.—Nothing beyond jobbing has transpired in Tin here, either on the spot or to arrive. The principal holders evince the same firmness, and the following *nominal* quotations are upheld: Straits 22¾c. @ 22¼c., gold; English L & F, 21¾c.; English Refined, 21¾c., and Banca, 26c., all gold. The English telegrams show an improvement of £1 in Straits Tin, which is quoted £94. The latest telegram adds: "Market with an upward tendency, no change in English." Simultaneously a telegram, dated yesterday, is to hand from Singapore, showing a decline to $24·75 per picul in Malacca Tin. Looking at the latest European statistics of Dec. 1, it will be found that they are unfavorable as regards the visible supply, while they are favorable so far as prices are concerned. The visible supply, including the quantity afloat, was 9997 tons, against 8180 tons and 6448 tons in 1873 and 1872. The price for Straits Tin was, on the other hand, £92. 10/, against £115 and £132. Hence the strength exhibited by the metal entirely rests on its cheapness, and not because there is not an adequate supply in sight. Consumption has been all that could be expected, but the large Australian shipments have spoiled everything. While, therefore, the metal is admitted to be cheap, it may not be as susceptible of ulterior improvement as some holders seem inclined to think. *Tin Plates.*—This article has held its own; the market remains firm, but business has been moderate, not exceeding, for the week, between 2000 and 3000 boxes in a jobbing way. According to telegrams to hand, Plates remain strong on the other side, with a fair prospect of a further rise early in the new year. We quote to-day as follows: I. C. Charcoal, $9·75 @ $10, gold, per box; Charcoal Terne, $8·62½ @ $9; I. C. Coke, $7·62½ @ $8; and Coke Terne, $6·87½ @ $7·25, all gold.

Lead.—The same quiet state of affairs hitherto reported continues in this metal, which remains dormant at 6·15c. @ 6·20c., gold. Domestic, with sales of but 50 tons all told for the week. Foreign is firm at 6¾c., gold. European advices are as firm as ever, although Spanish Lead begins to arrive more freely in England and the South of France. The fact is that the Spaniards, by their financial necessities, are compelled to resume Lead production with the utmost vigor, and the government will do all in its power to keep the mining regions free from the turmoil of civil war, as well as the roads leading to the shipping places on the coast. Hence the scarcity of Lead in Europe may become gradually relieved. This, at least, is the theory, and to some extent recent receipts seem to vouch for its correctness. There is no change in the market, and quotations for the manufactures of Lead remain steady on the basis of 8¾c. for Bar, Pipe and Sheet, less 10 per cent. to the trade.

Spelter and Zinc.—Although trade in Spelter is stagnant in our midst, the Europeans continue to screw up limits per cable, and have again raised them ½c. during the week, making the asking figures the following: Silesian Union, 7c., gold; C. G. H., 7⅛c., and W H, 7¼c., all gold. Domestic is dull at nominally 6⅝c. @ 6¾c., currency. Nothing has been done during the week in either description, nor is any business of note expected till we shall be safely landed about midway into January, when a brisker trade may ensue. The same quietness relates to Sheet Zinc, which remains firm at 9½c., gold, for 9x36; other sizes, 9c. @ 9¼c., gold.

Antimony is as languid as it has been throughout the month, at 12¼c. @ 12½c., gold, notwithstanding the telegraphic assurance from the other side that the works will rather stop than sell below £52., the present asking figure.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending December 22, 1874:

Hardware.

Boker Hermann & Co.
Mdse. pkgs., 12
Conroy, Bissett & Mallison,
Cases, 2
Conroy & O'Conner,
Casks, 3
Drexel, Morgan & Co.
Cutlery, cs., 1
Field A. & Co.
Mdse. pkgs., 8
Frogatt Edwin,
Guns, cs., 2
Fischer L.
Casks, 5
Friedmann & Laurerjung
Mdse. pkgs., 6
Gleason E. P.
Cases, 1
Hutchinson J. W.
Guns, cs., 1
Hildick A. H.
Chains, cks., 10
Anvils, cks., 10
Lennox E. S.
Bale ties, lots, 316
Lucey Wm.
Cases, 1
Mason John W. & Co.
Wire rope, coils, 3
Miller, Morrison & Co.
Cases, 2
Schoverling & Daly,
Mdse. pkgs., 2
Seaman H. A.
Casks, 1
Tomes Francis,
Gun caps, cs., 2
Turnor R. A.
Packages, 3
Chains, cks., 7
Van Wagoner & Williams,
Screws, cks., 8
Van Nest A. R. & Co.
Packages, 2
Van Wart & McCoy,
Mdse. pkgs., 1
Wiebusch F.
Mdse. pkgs., 18

Iron.

Henderson Bros.
Pig, tons, 100
Laughland & Co.
Hay bands, bdls., 600
Prosser Thos. & Son,
Tubes, bdls., 52
Pesant J. A.
Scrap, rails, tons, 40
Reeves, Osborne & Co.
Scrap, tons, 51
Order.
Sheet, bdls., 107
Without bills of lading.
Hoop, cs., 20

Steel.

Burnham & Co.
Cases, 13
Brown Wm.
Bundles, 127
Cases, 28
Lowndes Sam.
Steel points, cs., 2
Naylor & Co.
Cases, 1
Steel tires, 8
Robbins C. & Son,
Bundles, 51
Bars, 1
Order.
Cases, 27
Bundles, 820
Rods, bdls., 451

Metals.

Byrne Joseph & Co.
Tin plates, bxs., 1271
Tinned sheets, cs., 10
Gassler & Co.
Tin, slabs, 601
Phelps, Dodge & Co.
Tin, slabs, 493
Mdse. pkgs., 2469
Reeves, Osborne & Co.
Scrap, lead, lbs., 5854
Scrap copper, lbs., 850
Scrap pewter, lbs., 647
Scrap, brass, lbs., 870
Order.
Tin plates, bxs., 1145
Tin, slabs, 220
Tin ingots, 600
Without bills of lading.
Tin plates, bxs., 3285
Tin plates, cs., 78
Tin ingots, 760

COAL.

We have no new feature of interest to notice in the condition of the Coal market since last week. The associated companies held a meeting last week at the rooms of the Delaware & Hudson Canal Company, for the purpose of arranging the programme which is to be carried out next year, but did not arrive at any definite conclusion. It is believed, however, that prices will be reduced from last year's rates, which is looked upon as an absolute necessity. All the companies, including the Pennsylvania Coal Company, were represented.

The shipment of Coal ceased at the landings at Schuylkill Haven on the 10th inst., and the canal will be closed for the usual winter repairs on the 15th, the interval between these dates affording time for all the Coal boats to reach their destination.

The business of the canal has suffered, in common with that of most carrying companies, from the general depression of the iron and other manufacturing operations consequent upon the panic, but still its trade was but little less than that of last year.

A considerable number of the company's boats have been sent to New York with Coal, which will remain in them as storehouses until the demand becomes more brisk than at present. The rest are laid up in safe positions along the line of the canal, and with the exception of such as are worn out and will be cut up this winter, are in good condition.

The quantity sent from the Schuylkill region for the last week by rail was 67,340 tons; by canal, 3352—for the week, 70,692 tons, against 73,225 tons for the corresponding week last year; decrease, 2523 tons.

The supply sent from all the regions for the week was 239,943 tons Anthracite, and 51,805 Bituminous; for the week, 291,750 tons, against 272,850 for the corresponding week last year—increase for the week, 18,890 tons.

The whole supply sent from all the regions embraced in our present table, so far this year, is 21,148,602 tons, against 21,920,661 to corresponding period last year—decrease so far 777,089 tons, of which 609,199 tons are Anthracite.

We quote as follows: Cumberland, $6·75; West Virginia, $7·25; James River Steam, $6·25; James River Carbonite, $9; Kanawha House, $14·25; American Cannel, $13; Pennsylvania and Westmoreland, $7·65; Murphy Run, $7·40; Newburg Orrel, $7·50; Sterling Ohio, $12; Liverpool House Cannel, $17 @ $18; Liverpool Gas, $10; Newcastle Gas, $7·50 @ $8; Liverpool Coking, $13; Scotch, $9; Ince Hall, $17 @ $18.

OLD METALS, PAPER STOCK, &c.

Old Metals are extremely dull, with heavy stocks on the market and no demand of any importance. Canvas Cotton No. 1 is in good demand, and prices are strengthening. Grass Rope still continues very dull, and prices have a declining tendency. Other articles remain as last reported, and are in no way changed. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 4c.; Zinc, 4½c. @ 4¾c.; Pewter, No. 1, 18c.; do., No. 2, 8c. @ 12c.; Spelter, 5c. @ 5¼c., Wrought Iron, 1¼c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No 1, 6c. @ 6¼c.; No. 2, 2½c.; White, No. 1, 6c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 4½c. @ 5c.; Gunny Bagging, 1c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 2c. @ 2½c.

PHILADELPHIA.

PHILADELPHIA, Dec. 22, 1874.

The Iron market is without any particular change to note. The approach of the close of the year, and the possibility of a slightly increased demand early in January, makes producers slightly firmer in their views. Offers are, however, entertained at prices for mixed grades of Foundries considerably below those now quoted, and, in all probability, if pressed, would be accepted. Unless a decided improvement in demand should show itself by the middle of the coming month, we may look for as equally decided a decline in prices, and the stoppage of many more furnaces. In manufactured Irons the trade is very light. Advices from Pittsburgh indicate the probability of the puddlers coming in under the reduction of the card rate to 2½ cents. At the same time the offerings of Muck Bar from other regions are in such quantity and at such favorable prices as to make the stoppage of boiling a matter of little consequence to mill owners. With this week the Eastern mills will all stop for the usual Christmas holidays, which run over until nearly the middle of January, and many think that by the time they resume orders will be more plenty.

As is natural under the situation at Pittsburgh, both Old Rails and Scrap are in better request. Prices for all grades of iron continue difficult to quote reliably, and tend downward, although how they can go much lower does not appear. We quote:

PIG IRON.—No. 1 Foundry, $25 to $26; No. 2, $22 to $23; Gray Forge, $22 to $23.

BAR IRON.—2·8c. per lb., nominally.

OLD RAILS.—$28 to $31.

SCRAP.—$28 to $29, the latter for strictly No. 1 Wrought.

The sales include the following: *Pig Iron.*—1000 tons No. 2 extra, at furnace, at $20·50; 1000 tons No. 2, here, at $23; 500 tons do., $23, here; 1500 tons Gray Forge, equal to $22·50, here, and offer pending for 2000 tons, half each Nos. 1 and 2, at $21·50, cash, at furnace. Sales of Muck Bar in fair lots for Pittsburgh delivery at $40 to $41, and 2000 tons for Pacific coast, on private terms. *Rails.*—1000 tons Steel Rails at $80. *Old Rails.*—1000 tons, equal to $31, here. *Scrap.*—Sales of 200 tons No. 1 Wrought at $28 to $29, the latter for old Plate Iron, and 200 tons old Car Wheels at $23.

PITTSBURGH.

PITTSBURGH, Dec. 21, 1874.

PIG IRON.—There is no change to note in the general position of the Pig Iron trade, so far at least as relates to this market. Business continue exceedingly dull, and no change for the better can reasonably be expected until the hitch between the manufacturers and puddlers has been adjudicated, of which there does not appear to be much prospect at this writing. With about nine tenths of the puddling furnaces standing cold, the consumption of pig is of necessity very meagre, and unless the price drops low enough to stimulate speculation, or the lock-out is dissolved, it will continue so; furthermore, it is doubtful, even if the "strike" was at an end to-day, whether the furnaces would be started up before the middle of next month, as the mills nearly all stop during the first half of January to take stock and make repairs. The general tone and spirit of the market continues weak and in buyer's favor; and while some producers appear determined to hold their product until they can obtain better rates, there are others, again, who, from force of unfavorable circumstances, are forced to sell. Mill Irons may be quoted at $23 to $24, 4 mos; and Foundry, at $25 to $26 for Bituminous, and $33 to $35 for Hanging Rock charcoal. The stock of pig in the hands of mill owners is almost exhausted, as they have been buying only for immediate wants ever since they started up in the fall, and it is probable, in the event of a dissolution of the lock out, that there would, for a time at least, be quite an active demand, as the most of the mills would be forced into the market at about the same time.

MANUFACTURED IRON.—The most important feature to notice is the reduction in the card from three cents to two and one-half, bringing the selling price down to two and three-tenths; however, the change was only in name, as the card has not been adhered to for several months past, and it is not certain but what an order for a round lot, from a good, prompt, paying buyer could be even now be placed below the reduced rates. The feeling appears to prevail at competing points that the lock-out

here will inure to their benefit, but for the information of such it may not be out of place to state that the mills here, with the exception of their puddling furnaces, are still running and taking orders as usual; some of them had accumulated considerable muck prior to the strike, and beside it is claimed that it can be imported from other points cheaper than it can be made, that is, and pay the old rates for boiling.

NAILS.—While the nail trade cannot by any means be termed active, it is about all that it usually is, or that can be expected at this particular time; some of the factories are still in operation, while others are doing next to nothing. The card remains unchanged, and we continue to quote upon a bases of $3·35, 60 days, but, as in the case of iron, the card is not and has not for some time past been closely adhered to.

STEEL.—Some of our manufacturers report trade as having picked up slightly within the past few weeks, but as a rule it is quiet; orders are coming in sparingly, and mostly for small lots, while as regards prices they are without quotable change. It is hoped and expected, however, that business will revive next month, after stock taking and yearly settlements have been gone through with.

SCRAP IRON.—There has been considerable activity in scrap during the past week, in consequence of the "lock-out," as the mills are now using it in place of pig, and while there is an increased demand and firmer feeling, prices are no higher. Dealers quote buying rates, cash, as follows: Car Axles, $35; No. 1 Scrap, $25; Wrought Turnings, $20; Light Iron, $13; Machinery Metal, $17.

THE LOCK-OUT.—There has been no change in the situation since the date of my last review, and even if the strike were ended, of which there is not much prospect at this writing, it is not likely that many if any of the puddling furnaces would be started up until about the middle of next month. The manufacturers still adhere to the position they assumed before the strike, and declare that they will not, and cannot, abandon it, claiming that even at $5 per ton they would be paying more than all other competing points. The puddlers, on the other hand, while they are willing to drop the scale to 2½c., which would bring the price of puddling down to $5·50, say they will do no better, that they make no further concessions, and thus the matter stands. As already stated, however, the mills, with the exception of the puddling departments, are nearly all in operation, as they are able to obtain muck bar and Scrap Iron sufficient to keep them running, consequently they are able to take orders as usual.

The Pittsburgh *Commercial* of Dec. 19th says: As intimated in our report last week, the lock-out of the puddlers has had the effect to so completely stop the demand for Pig Iron that sales are confined to very small lots, used mainly for foundry purposes. Prices remain substantially the same, a slight concession having been made on the only lots of Mill Iron reported. The action of the puddlers in other sections preventing shipments of Muck Bar to the Pittsburgh market has had the effect to stop the sale of Iron in that shape, as no one had any stock on hand to ship, and puddlers would not work even on full wages on Iron to be sent to this market. The manufacturers have reduced the price of Bar Iron, making the card rate 2½c. It is difficult to tell what effect this will have on the market, but it is not expected that it will increase the demand, for the actual selling rate has for some time been at or below that figure. We cannot expect any change in the market before the 1st of January, as the holidays always have the effect to curtail business, and this season will operate to completely stop transactions. Just what direction the market will take after the holidays depends mainly upon whether the boilers resume work or not. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

160 tons gray forge	$23·00—4 mos.
100 tons foundry	26·00—cash.
70 tons No. 2 foundry	25 00—4 mos.
50 tons foundry	27·00—4 mos.
30 tons mill	23·00—4 mos.
25 tons foundry	26·00—4 mos.

CHARCOAL.

25 tons No. 1 foundry, Hanging Rock	$34·00 @ $35·00—4 mos.
25 tons foundry, Hanging Rock	34·00—4 mos.
10 tons cold blast	53 00—4 mos.

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Dec. 21, write us as follows: PIG IRON.—Some sales of round lots have been made upon special terms, but the buyers generally are holding off until the new year opens, giving a dull trade. The indications are that there will be an improved demand early in January for the standard grades of Foundry Iron. There are no signs of improvement in Cold Blast or Forge Irons. We revise our quotations, viz.:

HOT BLAST CHARCOAL.

Hanging Rock No. 1 ₱ ton	$28·00 @ 29·00—4 mos.
" " No. 2	26·00 @ 27·00—4 mos.
" " Forge	24·00 @ —4 mos.
Tennessee No. 1	27·00 @ 28·00—4 mos.
" Forge	24·00 @ —4 mos.
Alabama No. 1	28·00 @ —4 mos.
Missouri No. 1	28·00 @ 29·00—4 mos.
" No. 2	26·00 @ 27·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1 ₱ ton	$27·00 @ 29·00—4 mos.
" Forge	25·00 @ 26·00—4 mos.
Ohio No. 1	26·00 @ 28·00—4 mos.
" Forge	24·00 @ —4 mos.
Scotch Pig, No. 1	26·00 @ 28·00—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₱ ton	$35·00 @ 50·00—4 mos.
Missouri " "	43·00 @ 45·00—4 mos.
Kentucky " "	40·00 @ 42·00—4 mos.
Tennessee " "	36·00 @ 42·00—4 mos.
Georgia " "	40·00 @ 42·00—4 mos.
Alabama " "	40·00 @ 42·00—4 mos.
Machinery and Forge	40·00 @ 42·00—4 mos
Blooms	70·00 @ 90·00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of Dec. 21, writes us as follows: The market is dull at quotations, and round lots cannot be sold except at some concessions in price. There is not much disposition to force iron on the market, and the sales are limited. The usual time, four months, is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$28·00 @ 30·00
" 2 " " "	26·00 @ 27·00
" 1 Forge, " "	24·00 @ 25·00
" 1 F'dry, from Tennessee Ores	26·00 @ 28·00
" 2 " "	25 00 @ 26·00
" 1 Forge, " "	24·00 @ 25·00
" 1 F'dry, from Alabama Ores	26·00 @ 28·00
" 1 " " Iron Mountain Ores	28·00 @ 30·00

HOT BLAST STONE COAL.

No. 1 F dry, from Missouri Ores	29·00 @ 30·00
" 2 " " "	28·00 @ 29·00
" 1 Forge, " "	27·00 @ 28·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	40·00 @ 50·00
" " Tennessee Ores	36·00 @ 38·00
" " Alabama Ores	40·00 @ 42·00
" " Georgia Ores	40·00 @ 42·00
" " Missouri Ores	40·00 @ 42·00
" " Kentucky	30·00 @ 42·00

BOSTON.

DEC. 19.—*Pig* has felt the indifference of foundrymen the past ten days to the extent of 50c. on a ton, good No. 1 extra offering in round lots at from $27·25 to $27·50 on our wharf. We note one sale of 20 tons at $27·50, with a privilege on the balance of 160 tons. A little interest was excited early in the week by the announcement that the makers of one of the most popular brands were offering to deliver their No. 1 at Hoboken at $25, and another, later on, quoting $24 for extra No. 1. This is the lowest point yet known in this market. Some of the holders here are firm at $28 to $28·50, while a few still quote $31 to $33, but the latter get no business. There is nothing doing in Foreigns. The *Bulletin of the Iron and Steel Association* states that of 800 puddling furnaces in Allegheny county, Pa., but 73 are running. *Bar* is without improvement, selling at a range of from 2½c. to 3c., while occasional evidences are shown that a shade under these prices is made. On common Iron there is considerable inequality in prices, the Eastern mills offering, as to quality, from 2⅛c. to 2⅜c., while leading Western markets quote 2½c., with 30c. freight contracts. *Steel* is steady in price, with a slight improvement in the demand for Tool. We quote Machinery 9½c. to 10c.; American Tool, 15c. to 15½c.; English Tool, 17c. *Copper* has had a dull week, both in spot and futures, quoting strong for spots at 23¼c. and 23⅝c. for futures. This is just as the market stood a week ago. We quote: New Sheathing, 28c.; Bolts and Braziers, 30c.; Yellow Metal Bolts, 28c. *Lead* is firm. Sales, 50 tons. Domestic, 6½c., gold; Foreign is quoting ¼c. to ⅝c. higher. We quote: Sheet and Pipe, 8¾c., currency; Tin Lined Pipe, 16½c.; Bar Lead, 8¾c., less usual trade discount. *Spelter* is easy and dull; American at 6¾c., currency. *Tin* is firm at 22½c., spot Straits, and 22c. to 22½c. to arrive. The Western Chief, due this month, brings 1604 pigs Straits not yet sold. Refined English is firm for 21¾c. to 22c., gold. Plates are firm. We quote: Charcoal I. C., $11·25 to $12 50; Coke, $9 to $10; and Terne at $8·50 to $12·50 per box, currency.—*Com. Bulletin.*

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of Dec. 22: Trade continues ruling dull and stagnant, and the unwillingness to enter into new engagements so near the end of the year is more than usually apparent this season. We quote the list unchanged, but shaded:

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick.. } 1 to 4¾ wide by 1½ to 2 thick }	2·8-10 to 3 cts. per lb.
Round and square, ordinary sizes, from ⅜ to 2 inclusive	2 8-10 to 3c. "
Hoop Iron, 1¼ wide and upward	4½ to 4¾c. "
Band Iron, from 1¾ to 4 in. wide	3¾ to 4¼c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	4½ to 5c. "
Norway Nail Rods	7¾ to 8¼c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	16¼c. "
Machinery Steel	11¾c. "
Cast Spring Steel	10¾c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs	$5·87½
" Mule Shoes " "	6·87½

Common Horse Nails, from 14c. to 18c. per pound.

10	9	8	7	6	
Putnam Horse Nails..23	24	25	26	28c.	per lb.
10	9	8	7	6	
Globe Horse Nails...23	24	25	26	28c.	per lb.

R. R. Spikes.....5¾ by 9-16 at 3¾c to 4c. per lb.

Messrs. HOFFMAN, THOMPSON & Co., Iron commission merchants, 23 and 25 South Frederick street, under date of Dec. 21, report the Pig Iron market as follows: There have been considerable sales during the week of Charcoal Irons at about quotations, amounting, in all, to several thousand tons, which has relieved the market somewhat from the pressure to sell by producers. We quote:

Baltimore Charcoal Pig Iron	$30·00 @ 35·00
Virginia " "	30·00 @ 35·00
Alabama " "	28·00 @ 30·00
Anthracite No. 1	27·00 @ 28·00
" No. 2	26·00 @ 27·00
" No. 3	23·00 @ 25·00
White and Mottled	17·00 @ 20·00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Dec. 6, 1874.—*Metals.*—Business has experienced a check since the discount rate of the Bank of England was raised to 6 per cent. early last week, the more so as apprehensions are felt of a further advance. The immediate consequence, both in England and on the Continent, has been a tendency toward lower prices in metals that had been the subject of speculation since midsummer. This relates more particularly to *Copper*, which had been pushed all the way to £89 at London, in order to decline to £85. 6/, now, for Chili Bars. To some extent the breakdown is attributable to certain articles in the London *Times* attacking the official brokers' statistics, but more still to the bungling manner in which these statistics were defended by certain trade papers, which have been bolstering up Copper so clumsily that confidence has received a severe shock. The markets have been but indifferently well upheld in France. We quote Chili Bars deliverable at Havre, 230 francs; Common ditto, 227·50; ingots, 242·50; English Tough Cake, 245, and pure Corocoro Ore, 230. Havre is quiet at the following quotations: Chili Bars, 225 to 232·50; Refined Ingots, 240 to 242·50; pure Peruvian Ore, 230, and American Lake Superior, 245 to 250. Marseilles is steady; the following are the current rates there: Chili Refined Ingots, 230; Sheathing, 255; Yellow Metal ditto, 230. The rising discount rate in England has also unfavorably influenced the Tin markets, which had become very quiet subsequently to the Dutch sale, all speculation now ceasing, and the demand for consumption also subsiding. We have been quiet here at 262·50 francs for Banca, and 245, Straits and English. Marseilles has also been inactive at 260 for Banca, and 240, Straits. *Lead* is not as firm as it has been for some time past, the arrivals from Spain being more liberal both at Marseilles and in England. A higher rate of discount affects this metal less than any other, the stocks in the hands of both dealers and consumers being as yet limited. Speculation has had little to do with the gradual advance since the summer time. Steadily increasing supplies from Spain would bring about a decline by degrees. The range of 59 to 59 50 is still upheld on a rather dull market. At Marseilles, with less doing, Lead remains tolerably steady at 55 to 56. *Spelter.*—Being more speculative than Lead, this metal yields with greater pliancy under money pressure. Still it keeps up pretty well, although less active. We quote good to best here 62 to 63 francs; market dull. Havre is steady at 62 for Silesian; Marseilles is unaltered. *Iron.*—The French markets have been unusually quiet. Prices of refining Pig have been ill sustained at Nancy. In the Meurthe and Moselle White Pig has sold at equal to £3. 10/ per ton. We expect no particular change in value in that locality. Among the latest arrivals of Iron Ore on the Coast of France we note one of some importance from the Island of Elba, whence altogether some 20,000 tons have come to hand. We hope that from now forward the custom houses on our Southern Coast will give monthly returns of the amounts of iron ore received at the various points from Algeria. According to official statistics from that colony of ours, the exports from there are as large to foreign countries as they are to France. Algerian Iron has become indispensable to our industry, and we require full statistics about it. *Coal.*—Although the weather is colder, there has been a slight decline; the only kind of Coal which has a tolerably good sale is Coal for domestic purposes—all other sorts are neglected.

BELGIUM.

(Le Commerce.)

BRUSSELS, Dec. 6, 1874.—*Iron.*—The general position of the Belgian Iron markets is becoming more gloomy. At our present moderate range of prices every inducement seems to be held out to both foreign and domestic purchasers to avail themselves of the cheapness prevailing, yet on 'change little was done, although there was a full attendance, and despite the concessions which makers showed every readiness to subscribe to. At Liege the same hesitation to operate was observable. The official statistics of the Iron movement in Belgium have just been published, according to which the country imported, during the first ten months of the current year, 150,890 tons, being a decrease of 3414 tons. Belgium exported, during the same period, 231,549 tons, against 191,498 and 243,170 in 1873 and 1872. England took of Belgian Iron 30,3 2 tons, or about 20,000 more than last year. We exported to Holland 34,000 tons; to Italy, 32,000; to France, 29,700; to Germany, 22,000; to Russia, 16,800; to Switzerland, 10,000; to Turkey, 6288, and to Brazil, 6330. *Coal.*—Prices are upheld with a good deal of difficulty, the requirements of consumers remaining below the average of former years. Some of our companies have the intention to lower prices for the ensuing month, and with them wages. Of foreign Coal we have imported during the ten months 311,586 tons, or 190,000 less than last year during the corresponding period. We have exported 3,205,681 tons, against 3,582,750 and 3,911,182 in 1873 and 1872.

GERMANY.

(Borsenhalle.)

HAMBURG, Dec. 5, 1874.—*Copper.*—The German markets have been well maintained; at the same time prices have scarcely varied, in consequence of the light business transacted. The following are the quotations here: Drontheim, 89 marks; Demidoff, 100; Norwegian, 90; Atvidaberg, 89; Minnesota, 115, and Chili, 89. The Berlin market has been steady at 32¾ to 33; Stettin quiet, 29 to 32 thalers. As for Holland, Copper is tolerably well sustained there, also, at 50 to 52 guilders at Rotterdam and 53 at Amsterdam. *Tin.*—No change worth speaking of; we quote here Banca, 108 to 110 marks; English, 106 to 108 in blocks, and 108 to 110 in bars. Stettin is steady at 37 to 39 thalers. Berlin is sustained at 34¾ to 36½. *Lead.*—The German markets for Lead have been rather tending upward. We quote English here, 26·20 marks; German, 23·75 to 24·10; Spanish, 25 to 25 50. Stettin has not varied from 8¾ to 9 for Spanish and 8½ Tarnowitz. Berlin has been improving, and may be quoted 7⅞ to 7¾ thalers. *Spelter* has been well supported at 24 to 24·25 marks here, 8¾ thalers at Berlin and 22·25 to 22·30 at Breslau.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Dec. 1, 1874.—*Tin.*—Since the late sale some transactions took place in Banca at the auction figure of 58·40, and Billiton, January and February delivery, at 56 guilders.

EXPORT OF TIN FROM HOLLAND.

	Nine months.		
	1874. tons.	1873. tons.	1872. tons.
Germany	2,465	2,196	1,940
England	331	1,129	121
Belgium	1,219	750	888
France	306	379	129
Hamburg	825	205	363
United States	16	...	...
Other countries	317	167	219
	4,979	4,855	3,660

MEXICO.

Minero Mejicano.

MEXICO, Nov. 26, 1874.—*Coal.*—A company has recently been formed for the purpose of mining and exporting Coal on an extensive scale from the Coal beds on the River Panuco. The Santa Clara mine produces excellent gas Coal; the Magdalena, furnace Coal; the Clementina, for both purposes. The river is navigable from the mines to port (Tampico), 190 English miles. In September a steamer of 300 tons ascended the river and took soundings. The Magdalena Coal is equal in quality to Cardiff. One of the nearest ports which the Mexican Company expects to furnish with Coal is Galveston, Texas. The Company has also an eye on Cuba as a consumer of Coal. A sample of Coal from these mines of 38 arrobas (950 pounds) in a single block will be forwarded to the Philadelphia Centennial Exhibition.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Dec. 7, 1874.

THE CHRISTMAS FESTIVITIES

will have commenced by the time this has been printed and sent into circulation from, one end of the great American continent to the other. In quiet and sedate Boston; in gay New York; in grave and potent Philadelphia; from your northern boundary to the southernmost line of land that melts into the tropical Gulf of Mexico; from the boisterous storm coast of the Atlantic to the backbone of the World, and thence to the calm waters of the placid Pacific; in the streets of marvelous Chicago, as well as in the broad ways of mercurial New Orleans; in all these places and between all these grand limits, I take it, preparations for Christmas are the all-in-all of existence. Men of iron—and, I trust, men of *The Iron Age*—men of steel, of hardwares, of metal, are for once throwing aside their burdens of care and anxiety, and forgetful of corners, bears, bulls and markets, are not a little pleased to find themselves so excessively human at this happy time; this period of good will toward our fellowmen. I don't intend this to degenerate in to a mere string of prosy platitudes, neither do I seek to elevate it into the region of sermonizing, but I do think it befits the man of business to throw off his harness, now and then, and take a little breathing time, and a little wholesome enjoyment before again buckling on his armor preparatory to struggling afresh for additions to "that little heap" of dollars, or sovereigns, as the case may be. There can be little doubt that the pressure on business men becomes greater every year. There is more competition in every branch of trade, less profit, with a proportionately (universally) greater amount of trouble and anxiety, and the periods of commercial panics appear to be more frequent than they used to be. This last fact is of course owing to the great extensions of ocean telegraphy and consequent rapidity of communication between any given points. We still progress in all respects. The world moves rapidly. Its pulse is quicker than of old. Its peoples are striding onward, onward to a future of which they conceive but little. In the van are England and America—pioneers of commerce, of science, of every kind of enterprise, of civilization and christianity—hand in hand they march, and they are pressing forward in a hundred ways the truer interests of humanity. As a mere unit in the population of Great Britain, I, once again, wish all your thousands of readers, and the people of America (at a time like this one can afford to be somewhat reckless about numbers, a million or two either way making but little difference) a very sincere, a hearty and a cheerful

MERRY CRISTMAS AND HAPPY NEW YEAR!

As to business generally, I cannot speak with much confidence. The present is not very lively. The past has been irregular, good in some cases and bad in others, and the future, so far as it can be predicated, has not a very cheerful appearance. You will readily apprehend that I am speaking of this country alone, and not of your side of the water. The present state of affairs will be found dealt with at some length in the various appended reports from several districts. The future is, I may say, being looked forward to from very varied standpoints. One man thinks he cannot see any prospect of an improvement it is side next midsummer, while another predicts, with the utmost confidence, that a period of positive and real activity will set in shortly after Christmas. A steel manufacturer here, with whom I had some conversation the other day, was morally certain that as soon as the new year had fairly set in trade would look up very smartly. He was so sure of this that he had set all his melters on full time up to Christmas, so that on the resumption of business, after the holidays, there should be plenty of raw steel for the rollers, tilters and forgers to work upon! This view is, I ought to mention, shared in by many of the steel men. Their hopes are centered in the States. If your trade revives they say they are certain to be "out of the hole" into which matters have fallen. If not, why then I'm afraid they won't be quite so cheerful. The same remark has equal application to cutlery, and in a certain manner to the South Wales iron trade. It certainly appears improbable that trade can grow much duller than it is in some districts, so that probability as well as hope points to a revival, even if it be a small and weak one.

SCOTCH PIG-IRON TRADE.

Since the date of my last report there has not been a great business doing in warrants at Glasgow, the price having remained between 84/ and 85/. There has, nevertheless, been a steady business in shipping brands, last week's returns being 11,171 tons as against 10,159 tons in the corresponding week of last year. Despite this encouraging amount of business, makers' prices have come down several shillings per ton, and a good tonnage is being sent into store. The "bears," becoming alarmed at this last fact, are naturally endeavoring to uphold figures by all possible means. They will, probably, be fairly successful, seeing that the quantity in store cannot have much effect on the market until the accumulation reaches about 100,000 tons. At present there are 25,632 tons in Connal's warehouses. There are now 121 furnaces in blast in Scotland. Last year at this time there were 122. The furnaces out of blast number thirty-six. Pig-iron for ballast remains at 60/ per ton delivered alongside ship in the Clyde. Freights are also unchanged. Writing on December 8th, Messrs. Wm. Colvin & Co., Glasgow, said: "We have again to report a quiet market during the past week. Business was done in Warrants from 85/6 to 87/ for promt cash; the latter price was paid on Friday last for settlement on that day. Yesterday and to-day the marked has been very inanimate, only one or two transactions having taken place at 84/3 and 84/6, closing at latter price this afternoon." Undernoted are quotations for makers' iron.

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	88/	81/
Gartsherrie, "	95/	85/
Coltness, "	100/	84/6
Summerlee, "	95/	81/
Calder, "	92/	81/
Monkland, "	88/	80/
Clyde, "	87/	81/
Govan, at Broomielaw	90/	80/
Langloan, at Port Dundas	100/	83/
Calder, "	100/	84/
Glengarnock, at Ardrossan	94/	83/
Eglinton, "	86 6	79/6
Dalmellington, "	87 6	80/6
Carron, at Grangemouth, selected	95/	...
Shotts, at Leith	97 6	84/
Kinneil, at Bo'ness	90/	78/6
Bar Iron	£10	
Nail Rods	10	

SHIPMENTS.

	Tons
Week ending December 5, 1874	11,172
" " December 6, 1873	9,138
Increase	1,98
Total decrease since 25th December, 1873	151,513

Messrs. John E. Swan & Brothers (limited) give the following figures in their prices current of December 4th:

Glasgow Brands.	Furnaces Blowing, 121	Furnaces Out 36.	Furnaces Built, 157.	Prices. No. 1.	No. 3.	No. 4
Gartsherrie	14	2	16	96/	85/	..
Coltness	12	0	12	100/	84/	..
Summerlee	6	2	8	95/	81/	..
Langloan	7	1	8	100/	83/	..
Govan	4	1	5	90/	81/	..
Calder	6	2	8	*100/	83/	..
Shotts Bess'mer	5	2	7	95/	90/	..
Shotts Ordinary				97/6	84/	..
Carnbroe	4	2	6	92/	82/	..
Wishaw	2	1	3	..	..	..
Monkland	6	3	9	88/	81/	..
Chapelhall				..	..	..
Clyde	6	0	6	88/	81/	..
Quarter-Clyde	4	1	5	88/	81/	..

* f. o. b. Glasgow, 1/ per ton, extra.

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., 85/.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock	7	2	9	94/	83/	82/
Ardeer	4	1	5			
Eglinton Brand'd	6	2	8	86/6	79/6	80/6
Eglinton Ordin'y	4	0	4			
Lugar	3	0	3			
Muirkirk	3	3	6			
Portland	6	2	8	87/	80/	75/
Dalmellington						

EAST COAST BRANDS—*f. o. b. in the Forth.*

Kinneil	3	1	4	90/	78/	72/6
Almond	2	1	3	87/	80/	..
Carron Select'd	5	1	6	95/	..	..
Carron Ordn'y				87/6	..	..
Lochgelly	2	2	4	87/6	80/	..
Lumphinnans	0	2	2	..	77/6	70/
Bridgeness	0	2	2	..	..	..

NORTH OF ENGLAND AND CLEVELAND.

There is a fair exportation of pig iron from Cleveland, and the Northern ports to the Continent, but the home demand grows less week by week, in accordance with the growing inactivity o the local and district finished iron trade. Almost all the rail mills in Cleveland are idle, which means that the staple industry is for the time laid off; thousands of men are out of employment, and their families are in distress. Some of them have been drafted off to other districts or towns, and a portion of the whole number has found employment in one or other capacity. Many of the rail manufacturers begin to despair, and they openly express fears that steel rails will wholly oust the iron rails, which only Cleveland products, completely out of the field. Some are already proposing to begin making steel cnes, others think they will wait until next spring.

TRADES OF SHEFFIELD.

The efforts to reduce the wages of the men employed in the rail and tire departments, to which I have made several detailed references of late, have at length assumed more definite and decided forms. I have, on more than one occasion, stated that in these departments the workmen had not had an average of two to three days' employment per week for several months. These facts have brought about what is a purely natural sequence—the discharge of a number of men in one instance, and the lowering of the rate of pay in others. In the one case by adopting the plan of "cogging"—rolling—down the ingots or blooms of Bessemer steel direct from the converters, John Brown & Co are enabled to dispense with the services of about 200 hammer men, and they have, therefore, received notices to leave. The economy thus effected is of very material service in enabling quotations to be reduced, inasmuch as instead of requiring about fifty men to work a rail mill on the two shifts, eighteen men are able to do the work without any diminution in the production of the finished rails. The rail trade is still quite as dull as when last alluded to in your columns. The United States are literally taking nothing in this branch at present, and have been the poorest of customers all throughout this year. Last year, on the contrary, at least 130,000 tons of rails, worth £2,000,000, were sent to the States from this town and locality.

In the tire branch of manufacture the prevalent depression is quite as marked, there being hardly any orders on the books of local firms for that class of railroad articles. Steel tires, as is pretty well known, are not looked upon with the greatest favor by engineers, consequently tires made from the best iron are those now mostly asked for. They do not, perhaps, wear quite so long as the steel ones, but they are tougher and not so liable to break during frosty weather; but even for this class of tires there is at present a demand of the slightest possible nature. In a certain sense, this dull state of affairs is owing to the very keen Belgian, French and German competition for Continental contracts, but it is also in a still greater degree attributable to the fact that there are but very few buyers in the market. Our manufacturers are therefore being underquoted in a way which does not augur well for the future state of their businesses, and to an extent of which an instance was quoted a few weeks back. Taking both these facts into consideration, Messrs. John Brown & Co. and Messrs. Brown, Bayley, & Dixon, have determined to reduce the wages of their tire men. In the one case, about 150 men have received notice of a drop of 20 per cent., and in the other 300 will be reduced 15 per cent. In the latter instance the men will in all probability accede to the notice, and in the other there is very little probability of any serious resistance being offered, although the men urge that the drop is of too sweeping a nature. They allege that the total advances received by them have been 10 per cent. only, whereas the shinglers, boiler plate rollers, and other men obtained advances amounting to 47½ per cent. in the total. It should be stated the plate rollers and shinglers, etc., have also to submit to a reduction of 20 per cent. A special general meeting of the men thus affected was held at noon on Monday to consider the matter, Mr. John Kane, general secretary of the National Amalgamated Association of Ironworkers, being present. The men were called to this gathering by a circular, headed, "Read slowly—think carefully!" and the objects for consideration were put down as—"(1) To consider and arrange such plans as shall lead to a better feeling in the lodge; (2) to consider what line of action to lay down for the future safety of every member, as the signs of the times are not over encouraging; (3) to appoint auditors; and (4) to consider the report of the last council meeting at Cardiff." The meeting was held in private, but I believe I am accurate in stating that it was attempted to devise some means whereby the men who are out of work could be provided with employment—an object which will be further ventilated at a public meeting before long. Mr. Kane addressed the meeting on the subjects enumerated. I may say that there is considerable distress in the families of those who are now thrown out of work, after a long period of only slight employment, and that the condition of trade in every part of the country does not warrant the hope that they will readily meet with engagements.

A public meeting was held at Sheffield on Saturday night, at which Mr. Kane gave an interesting address, touching mainly upon the question of forming a federation of the trades unions, and the establishment of manufacturing enterprises on the co-operative principle by the trades unions. He strongly advocated both these measures. In the course of his speech he held that the present dull state of the iron trade was caused by the recent great commercial panic in America, supporting his argument by saying that the United States had previously bought more of our productions than all Europe put together, and adding that as soon as trade revived there it would do the same in this country. In speaking of the establishment of co-operative iron works, he gave them the timely reminder that when they got their own works or workshops they would require customers.

A very large fort shield was rolled at the Atlas Works—John Brown & Company, limited—on Saturday last, in the presence of several gentlemen, including Sir John Brown, Major Waterhouse, M. P., R. Tennant, M. P., and Charles Markham, Staveley. The plate is one of 24 of the same size, all being intended for the "No Man's Fort," at Spithead. In order to produce this plate the furnace had been charged with seven molds, each mold being of plates of iron 11 ft. 9 in. by 8 ft. wide, by 1 ft. 5¼ in. thick. The total weight of these was 26 tons 14 cwt. 3 qrs. 18 lbs. After having been duly heated, the masses of iron were piled and passed through the rolls in the usual manner, the plate being then 25 ft. 6 in. long, 8 ft. wide and 7 in. thick, and weighing about 25 tons 10 cwt. It was, when cold, taken to the shops for the purpose of being planed, drilled and slotted. After these operations have been performed, and the bolt and port holes cut, the plate will weigh about 21 tons 1 cwt. 3 qrs. 14 lbs. It may be stated that the rolling of this huge mass of metal occupied half an hour. Very much thicker armor plates have frequently been rolled at the same works.

On Tuesday afternoon 100 tons of Acadian bar iron, bearing the mark of the letter A in a diamond, were sold by auction. Ten tons realized £15. 5/ per ton, and the remainder sold for £15 per ton. The state of almost every branch of business remains very quiet indeed, with little prospect of improvement this side Christmas. The severity of the weather during the past week or two has had a marked effect on the house coal trade, although there is much quietude in steam coal and engine fuel.

On December 1st many of the South Yorkshire and some of the East Derbyshire colliery proprietors advanced the price of house coal—some 6d., others 1/, and a few even 1/6 per ton. Some of those who augmented quotations last month have not as yet announced a rise, but it may be stated that most of the large colliery owners participate in it.

I again have no alteration to record in cutlery, for some kinds of which there is a rather livelier inquiry. It is, however, unsafe to draw any inferences from this, as the men are always found as much work as possible at this season.

BIRMINGHAM AND STAFFORDSHIRE.

In both the districts comprehended under this heading there is very little change to be noticed in the general state of the finished iron trade. It is the same everywhere. There is a purely hand-to-mouth business, and that is all. Forges and mills are started one morning, and are knocked off at night, to be restarted next day providing the day's mails bring in a sufficiency of orders for four and twenty hours' work, and so on, at present *ad infinitum*. Prices decline owing to the keen competition for the very few orders left in merchants' hands. Everybody is

assuming that there will be a drop of at least 20/ in all kinds of finished iron at quarter day, consequently all the second-class and inferior makers are forestalling the market by dropping common bars to £9 and £9. 5/, better class to £10, and best (except the "three usual exceptions") to £10. 10/ per ton. Sheets (singles) are being sold at £12 and £12. 5/, strips at £9, 10/ and hoops at £10. 15/ to £11. The transactions are not very numerous, but they serve to show which way the wind blows. Hardwares are all fairly active, and some of the Birmingham industries in this branch are enjoying much briskness. A *further* advance of 3d. per ton has been made on common galvanized buckets, and a similar one has been imposed upon several kinds of articles made from ordinary galvanized sheet iron. Water bowls are 6d. per dozen higher; oval foot tubes 1/ per dozen higher; round ditto from 6d. to 1/6, according to dimensions; chamber pails, 1/; galvanized Waterloo's, 6d.; japanned ditto, 6d.; turnipskips, 6d.; and several other similar goods 6d. to 1/ per dozen more money. The Broomsgrove wrought nails are a little higher, owing to the men having struck for wages.

SOUTH WALES.

The South Wales, Monmouthshire and Forest of Dean coal owners had given their men notice of a reduction of 10 per cent, and all appeared to be going well when Mr. Henry Crawshay (a leading owner) wrote to the local newspaper, stating that he did not consider the state of the coal trade was bad enough to warrant any reduction of wages. This has sprung a mine. The men swear they won't give in, and think that their employers have simply been trying to break faith with them. The iron trade of the principality is very quiet indeed. Few of the works are doing anything worth speaking about, and fewer still have a week's *partial* work assured before hand. Mr. Crawshay, of Cyrfarthfa, is selling all his horses off, probably intending to use more small locomotives than he has hitherto done. His furnaces, also, will in future be worked by hot instead of cold blast.

THE METAL MARKETS.

The metal markets have been quiet during the week, and copper has receded somewhat in prices. Chili charters for the latter half of October amount to 3200 tons. These figures being rather large, Chili Bars have gone back as low as £87, at which price several sellers appeared glad to "see their money again." *Tin* has become firmer since the sale in Holland of 30,100 slabs Banca, and prices in London have gone up to £102. Straits on spot and for arrival has sold for £92. 10/ to £93, and rather over 60 tons of Australian have changed hands at £92 to £92.10/. *Lead* has gone up in price and remains firm at the rise, reaching £23. 12/. 6.

Von Dadelszen & North's report says: "An average amount of business has been reported in Straits tin, from £93. 10/ to £93 on the spot, and £92. 10/ to arrive. Very little Australian has changed hands, the present value £92. 10/. The Dutch market is dull, Banca about 58f., and Billiton 55f. No change in English tin. Tin plates remain in steady demand without change in value. *Lead* not quite so firm, £23. 15/ to £24 sellers. *Spelter.*—The only official transaction we have heard of this week is 25 tons London at £23. 15/, ex-ship here. *Quicksilver* without change. The late arrivals were sold previously. £25 nearest price."

The December report of Messrs. Richardson & Co., Swansea, says: "The sensible upward movement noticed in our closing remarks of last issue has proved to be of a sound character. During the first week of the month bars experienced a greater rise than has been witnessed since the speculative excitement of January, 1872, having risen £5 per ton in one week, and that too in the face of the apprehended rise in the Bank rate, which kept mere speculation quiet. The smelters have been very large buyers 'to arrive.' It is, to say the least, clearly to the interest of all engaged in the legitimate trade of this metal to keep up prices. The Chili advices reached us on the 9th ultimo, giving 1600 tons fine as chartered for the first half of October, which, being a moderate figure, added to the firm and advancing tone of the market. Values steadily hardened during the whole month, and a large business was done both in bars and raw material, leaving available stocks much below the usual standard. A noticeable feature in the past month was a letter and paragraph in one of our leading journals, which tended to question the returns given by wharfingers, thereby momentarily casting doubt on their accuracy and even their good faith. Large buyers, however, are too well versed in the actual state of import and export to allow any sensational or erroneous assertion to operate against their reliable sources of information. We are daily waiting the arrival (much behind) of the Chili advices for the second half of October and the first half of November. To some extent this delay causes a check to the activity of trade, but the present good statistical state of our stocks is too marked, even should the next charters be heavy, or the money market become tighter, to make anything but a momentary retrogression in prices. If demand continues at all in the same steady manner as of late, we look for further improvement. We quote ores and regulus 17/9 to 18/3 per unit; tough cake, £95 to £98; Chili bars, £88 to £89. Bar silver 4/10 per oz. standard. *Tin*—English block, £99; Straits, £93 to £94; Banca, £101 to £102. *Lead*—English pig £23. 15/ to £24; *Spelter*—£25 per ton.

Vivian, Younger & Bond's report: "During the early part of last month the demand for Copper of all descriptions was very active. Chili bars advanced from £85 to £88. 10/ for ordinary, and to £89. 10/ for picked brands, £90 to £91 being paid for a small quantity of Walker and J. Edwards. The announcement on the 9th ult. that the charters for the first fortnight of October were only 1600 tons in fine copper, further stimulated the demand, and the smelters bought freely of furnace stuff up to 18/4½ per unit for Chilian regulus, reducing the unsold stock to 1000 tons, and "to arrive" during the next five months to about 1700 tons, all fine copper. The uncertainty as regards the course of money has checked the market, the abovementioned advance to 6 per cent. coming with a further advice by cablegram that the charters for the second half of October were 3300 tons fine, prices gave way 30/ to £2 per ton, which, however, has brought in buyers, and at £86 to £86. 10/ as we close large transactions are reported. The deliveries for the month are extremely large, and in fact the general statistical position of the article improves month by month."

Smith, Owen & Co.'s price list of Swedish Charcoal Iron, &c.: "*Swedish Charcoal Iron &c.*—To arrive from Sweden.—Rolled horse nail rods, ordinary sizes, squares, £17. 5/; do., rounds, £17. 15/; do. bar iron, ordinary sizes, 13-16 inch to 1 inch squares, 1 7-16 to 5 inch wide by 5-16 inch thick, or thicker, flats, £16 10/; hammered bar iron, ordinary sizes, ⅜ inch to 2 inch squares, 1 11-16 inch to 5 inch wide by 7-16, ⅜ and ⅝ inch, also 1⅝ by ⅛ and ⅝, and 1⅛ by ⅝ inch flats, £17. 10/; do., superior quality for machine purposes, £18. 10/; do., short bars, 3 inch by ⅝ inch (80 to 90 bars per ton), £16. 10/; do., 3 inch by ⅛ inch, £16. 15/. (Brands suitable for Mediterranean markets.) Keg steel hammered, £20. 10/; do., rolled, £20; bloome, £11. 10/; billets, £14. 10/; pig iron, £6. Above prices, ex ship, Thames or Hull, less 2½ per cent. discount; ex. ship Liverpool, 5/ per ton extra."

Messrs. Warner, Walduck & Co.'s prices current include these: "Champion bars, £10. 10/; hoops, £11; sheets, £13; strip, £10, at works; charcoal bars, £21; hoops, £22; sheets, £23 per ton, at works; homogeneous sheets, £32 per ton; solid drawn steel tubes, from 1/ per foot; bolts and nuts from £17. 10/; spikes and rivets from £12. 15/, in London. *Tin Plates.*—Hendy charcoal, ex ra fine quality, 38/9 per box; Gower charcoal, 35/; Rhos coke, 31/6 per box; common coke plates, 26/6 per box. Terne plates from 25/6 per box. Black sheets, 20/ per cwt. Tin sheets, 42/ per cwt. Rolled brass, 9¾d. per lb.; brass tubes, 12d. per lb.; copper tubes, 12½d.; brass wire, 9¾d. per lb.; copper wire, 12½d. per lb.; telegraph wire, 12½d. per lb."

THE CENTENNIAL CELEBRATION.

An Appeal from Prominent New Yorkers on Behalf of the Philadelphia Exposition —the Plans and Prospects.

To the People of New York: The undersigned, your fellow citizens, impelled thereto by a sense of duty, take the liberty of addressing to you a few words about the coming celebration of the Centenial of American Independence.

HISTORY OF THE ENTERPRISE.

In 1871 the American Institute of this city and the Franklin Institute of Philadelphia, the councils of the latter city, the Legislature of Pennsylvania, with many citizens of different sections of the country, brought this subject to the attention of Congress. That body, after due deliberation, decided that the movement was a proper one, and in the preamble to the law making provisions for a fitting celebration, did commend the same to the people in the following felicitous terms, to wit:

Whereas the Declaration of Independence of the United States of America was prepared, signed and promulgated in the year 1776, in the city of Philadelphia; and, whereas it behooves the people of the United States to celebrate by appropriate ceremonies the Centennial anniversary of this memorable and decisive event, which constituted the 4th day of July, anno Domini 1776, the birthday of the nation; and, whereas it is deemed fitting that the completion of the first century of our national existence shall be commemorated by an exhibition of the national resources of the country and their development, and of the progress in those arts which benefit mankind, in comparison with those of other nations; and, whereas no place is so appropriate for such an exhibition as the city in which occurred the event it is designed to commemorate; and whereas, as the exhibition should be a national celebration in which the people of the whole country should participate, it should have the sanction of the Congress of the United States.

The letter and spirit of the law following this preamble shows that Congress intended that the celebration should be broadly national in its character, for it intrusted the management to commissioners to be chosen from the several States and Territories, and provided that the leading feature of the ceremonies should be a national and international exhibition of arts, manufactures and the products of the soil and mine, "to be conducted under the auspices of the government of the United States."

The commission to direct the celebrations and exhibition was constituted accordingly in the summer of 1871. But it was soon discovered that that body was wanting in authority to raise the necessary capital for the erection of buildings and other proper preparations. To supply this need Congress in 1872 created another corporation, known as the Centennial Board of Finance, clothed with the right to raise capital, not exceeding $10,000,000, by selling its own capital stock, in shares of $10 each, accompanied with the right to one vote for each share in the election of directors. "The proceeds of said stock, together with the receipts from all other sources, shall be used by said corporation for the erection of suitable buildings, with their appropriate fixtures and appurtenances, and for all other expenditures required in carrying out the objects of the said act of Congress of March 3, 1871, and which may be incident thereto." And the tenth section reads as follows, to wit: "That as soon as practicable after the exhibition shall have been closed it shall be the duty of said corporation to convert its property into cash, and, after the payment of all its liabilities, to divide its remaining assests among its stockholders *pro rata*, in full satisfaction and discharge of its capital stock."

On the 4th of July, 1873, the proper authorities of the city of Philadelphia, in the presence of the President of the United States, by her special representives and a vast gathering of the people, presented to the United States Centennial Commission a deed dedicating to said Commission 450 acres of ground in Fairmount Park for the uses and purposes of the said Centennial Exhibition. The President of the United States, by his special representive, commended the proposed celebration to the favor and support of the people of the United States, and did also call the attention of the governments of foreign countries to the proposed international exhibition of arts, manufactures, &c., to the end that all might participate therein.

THE INVITATION TO FOREIGN NATIONS.

Then, again, Congress, at its last session, while adhering to the policy indicated in its laws of 1871 and 1872, that the capital necessary for preparations should arise from the voluntary contributions of the people, passed a law facilitating the raising of capital, and another providing for the admission of articles for exhibition from foreign countries free of duty; and another, in the following terms, to wit: "That the President be requested to extend, in the name of the United States, a respectful and cordial invitation to the governments of other nations to be represented and take part in the International Exhibition, to be held at Philadelphia, under the auspices of the government of the United States, in the year 1876;" and we are informed that that cordial invitation, under direction of the President, has gone out to all the civilized nations of the world.

THE NATIONAL DUTY.

To our minds certain conclusions flow with irresistible force from the foregoing facts; one is that the people and government of the United States must accomplish the thing which they have told all the world they intend to do, on a scale befitting a great country, or bring upon themselves the just reproach of the people and governments of other countries, beside awakening in the minds of our own people a deep sense of humiliation and shame because of the failure. The work is before them as one of honorable success or lasting reproach. With such alternatives we cannot doubt for a moment where you will be found. Another conclusion is, that this undertaking, having been initiated by Congress and managed under its laws and under the auspices of the government, in which management every State of the Union may be represented, must be and is peculiarly national in its character, and our State and her great metropolis should be aroused to their responsibilities in this connection.

The international feature of the exhibition may be regarded as only a proper recognition of the courtesies heretofore extended to the United States by European countries in demonstrations of this character.

THE DUTY OF NEW YORK.

In view of all these considerations we feel constrained to press upon each one of you the necessity of extending such material aid as you can afford toward making up our State's quota. We deem it proper in this connection to give you all the information we have at command touching the present status of the undertaking, and it is proper to say that we gather this mainly from the official papers of A. T. Goshorn, Director General; John Welsh, President of the Finance Board; William Bigler, Financial Agent, and Thomas Cochran, Chairman of the Building Committee.

THE BUILDINGS.

The buildings are, first, an art gallery, covering a space of about one acre and three-quarters, the material being of brick, granite, iron and glass, the law requiring that it shall be perfectly fire-proof. For the erection of this building the State of Pennsylvania and the city of Philadelphia have appropriated $1,500,000. The inner walls of this building are now erected up as high as the square, and the granite is being set with marked rapidity. The contract requires its perfect completion six months in advance of the opening of the exhibition.

The main exhibition building, covering a space of twenty acres, and to be constructed mainly of iron and glass, was contracted for some months since; the foundations are now nearly ready, and the material is being produced at the mills and factories. It will cost about $2,000,000 and will be paid for out of the funds arising from the sale of stock, and is also to be completed six months before the beginning of the celebration.

The remaining buildings are the machinery hall of twelve acres, agricultural department of six acres, and a conservatory of two and a half acres, all of which will be under contract by the 1st of January next. The funds for the machinery hall and conservatory are furnished by the city of Philadelphia.

THE ASSURANCE OF SUCCESS.

As to the success of the exhibition, we feel warranted in saying that a wide spread interest has been awakened, and the present indications signify a marked success. Already the applications for space from our own people are nearly equal to the entire space set apart for the United States. We have sufficient reason to believe that in the departments of useful machinery, manufactures and natural productions the display will be grander than anything of the kind heretofore witnessed.

ACTION OF FOREIGN COUNTRIES.

The indications as to the display from foreign countries at this date, a year and a half in advance of the beginning, are far more favorable than had been anticipated by the managers. The following named countries have taken action—to wit, the German Empire has accepted the invitation of the President; France has accepted and has appointed commissioners resident in Philadelphia and New York; Sweden and Norway have appointed a commission, and have gone so far as to provide for defraying the cost of transportation of goods of their subjects to the exhibition and home; England's acceptance of the invitation has been communicated by telegraph, but the particulars are not known; in several of the British colonies—especially in Canada, Australia, New Zealand, Tasmania, and others of the Australasian Islands—exhibitions of unusual completeness and interest have been prepared; in Austria a large number of manufacturers and artisans have solicited space in the exhibition buildings; the governments of Central America and South America have manifested special interest in the exhibition, and the President's invitation has been accepted by Peru, United States of Colombia, Nicaragua, the Argentine Confederation, Brazil, Venezuela, Ecuador, Chili, Guatemala and Salvador, and for these countries commissioners have been appointed and the money appropriated for their expenses. Mexico, Honduras and Hayti have also accepted the invitation. Brazil and other South American nations have made application for space. In addition the Netherlands, Belgium, Liberia, the Sandwich Islands, China, Japan and Switzerland have accepted the invitation. Spain has accepted and appointed Senor Emilio Castelar, the eminent republican statesman, to be her resident commissioner at the American exhibition.

The means to the celebration provided for by Congress we regard as most fortunate, Great exhibitions, displaying the progress of the several nations in civil arts, always impart most valuable lessons. Nothing has done more for England and France within the past quarter of a century than their great international exhibitions, and no one can doubt that the coming exhibition will be followed by similar results to our country.

REPAYMENT OF THE STOCK.

As we understand it, there was no intention to shape Centennial operations with special reference to reimbursing subscribers to the stock; but circumstances have so shaped its affairs that the result is quite probable. This arises from the fact that the city of Philadelphia and the State of Pennsylvania not having the right to subscribe to the stock of the Centennial corporation, have appropriated $2,500,000 for the erection of certain buildings, which has the effect to give the stockholders the use of three of the principal buildings free of cost. Besides, owing to the low price of material, the buildings will cost much less than was anticipated. The expectation of the full redemption of the stock is strengthened by the results of certain local exhibitions, recently held in this country. It may be safely claimed that many persons, resident at remote points from the exhibition, inspired by the memories of the struggle for independence, will thereby be attracted to the celebration who might overlook an international exhibition with all its interests and peculiar attractions.

THE BENEFITS ACCRUING TO NEW YORK.

It is proper to remark, also, that while regarding the extraordinary contributions of Philadelphia as inspired in some measure by the expectation of incidental benefits, you should not forget that New York is also to be a beneficiary.

It will not be denied that visitors to the exhibition from foreign countries, with rare exceptions, will make New York their headquarters, and so also as to visitors from remote parts of our own country, and this will be rendered all the more certain because of the admirable railroad arrangements already designed by the Centennial Managers and Colonel Scott, of the Pennsylvania Company—to wit, that through trains between New York and the Centennial grounds are to be furnished, of such ample capacity and elegant equipment, moving so frequently and at such great speed, with rates so moderate, as to render it a matter of little concern to the visitors to the Exhibition whether their lodgings be in Philadelphia or New York.

WHAT OUR SELF RESPECT REQUIRES.

But, above these merely selfish considerations stand others which touch our pride and self respect, to wit, our "works of art and manufacture and products of the soil and mine" must appear in the grand display. Space in the buildings for this purpose will require capital, and we are sure that you will not consent that the skilled men of New York, with their choicest products, of which we are so proud, shall occupy space furnished by the capital of other States; nor will you claim a reduction in your share of the capital because of the surplus furnished by the people of Pennsylvania. That balance must stand for the relief of remote and needy States who can realize no incidental benefits. The truth is, fellow citizens, there is but one way of rendering our position in this matter satisfactory to ourselves and creditable in history, and that is a prompt performance of our full part in the ceremonies that are to commemorate the founding of our republic.

THE PROPRIETY OF THE CELEBRATION.

We cannot within the limits, dwell upon the reasons for the celebration, nor is it necessary, for we are proud of the fact that no one takes exception to the propriety of the proposed celebration. All agree that the great and decisive event that brought the Republic into existence ought to be celebrated by ceremonies no less comprehensive and fitting than those prescribed in the laws of Congress. Indeed, it is universally conceded that the people of the United States can do no more befitting thing than to come together at the very spot where liberty and independence were enunciated, surrounded by the evidences of the great achievements in arts and science that have distinguished the first hundred years of the Republic.

They ought thus to meet from the North and the South, from the East and the West, and, while exchanging assurances of fraternal affection for each other and devotion to the country, unite in thanksgiving to God, who controls the destinies of nations, for the goodness and mercy that have so constantly marked the dealings with our infant Republic.

Such intercourse would do much to efface and put away forever the remembrance of whatever has been unpleasant in the past intercourse between the States and the people, thereby begetting a stronger confidence at home and abroad in the peaceful endurance of our free institutions.

Peter Cooper,	C. B. Wood,
Wm. M. Evarts,	A. T Stewart,
Cyrus W. Field.	Wm. C. Bryant,
Moses Taylor,	Wm. E. Dodge,
John Taylor Johnson,	R. S. Storrs, D. D.,
Samuel Sloan,	H. W. Slocum,
August Belmont,	David Dudley Field,
Fred. S. Winston,	N. M. Beckwith,
Jackson S. Shultz,	William B. Dinsmore,
A. H. Barney,	George Opdyke,
Robert Lenox Kennedy,	William Orton,
	Abram S. Hewitt,
E. D. Morgan & Co.,	Edwarus S. Sanford,
Brown Brothers & Co.,	E. A. Parker,
John J. Cisco & Son,	Joshua Hanna,
Drexel, Morgan & Co.,	D. Appleton & Co.,
F. P. James & Co.,	Robert Carter & Co.,
George F. Hope,	Wm. L. Strang & Co.,
Henry Butler,	Pomeroy & Plummer,
H. B. Claflin & Co.,	Wright, Bliss & Fabyan,
Whittemore, Peet, Post & Co.,	Chase, Stewart & Co.,
	Spaulding, Swift & Co.,
William Turnbull & Co.,	James F. White & Co.,
	Fred. Vietor & Achelis,
Upham, Tucker & Co.,	Jacob Wendell,
Harding, Colby & Co.,	Enas Richardson & Co.,
Low, Harriman & Co.,	S. Hawk & Co.,
Hardt & Co.,	Darling, Griswold, & Co.,
John B. Hutchinson,	
Catlin, Brundrett & Co.,	B. G. Arnold & Co., Sheldon, Banks & Co.

The Steel Duties.

In April last the Secretary of the Treasury instructed Mr. F. A. Starring, Special Agent of the Department in Europe, to examine into and report upon matters connected with the trade in foreign steel of interest to the government. The letters of instructions suggested the following points of inquiry:

First. Are the recent advances in the open market price of iron and steel, and manufactures thereof, represented in the price invoiced when exported to America?

Second. Are special prices made for America?

Third. Are those special prices properly to be taken as the basis of duty?

Fourth. Has the open market price at Sheffield for cast steel during a year past been quoted at 60/, and at 56/ for a long time previously?

Fifth. Would a cash purchaser obtain a greater discount than from 2½ to 5 per cent. from the market price at Sheffield?

Sixth. Should the importing agents be allowed to pass cast steel at 48/ to 52/ as the extreme prices?

Seventh. What is the correct dutiable value of cast steel exported from Sheffield to the United States?

Eighth. What is the foreign market value of imported cast steel?

Ninth. What are the prices of iron and steel, and manufactures thereof, in other parts of England?

Tenth. What is the cause of the diversion of the steel import trade, by which nearly all imports have for some months past been entered at Boston, to be after entry shipped coastwise to New York, Philadelphia and elsewhere?

The following is a recapitulation of the report:

1. The steel controversy has arisen in respect of importations into the United States of what is known as best cast steel, which is manufactured at and exported from Sheffield.

2. The recent advances in quotations and raw material have only been partially represented in the invoice prices to the United States, owing to the fact that the manufacturers have been making their steel from Swedish and other iron in stock and store, or contracted for before the rise in prices, and have given their customers the benefit, simply because they could not realize the higher quotations.

3. The best cast steel manufactured in Sheffield for the United States market is made specially for that market, at special prices, and is different in both quality and value from that sold in Europe, although in some cases bearing the same designations. It is shipped by special manufacturers, whose prices vary from other firms.

4. The designations of various firms are sometimes identical, but the quality, and consequently the price, differ, owing to variation in mode of manufacture and in materials used. As a general rule, each manufacturer adopts a number of designations as his own, but this would be no proof of the quality.

5. One designation of steel of a particular manufacture often includes several qualities at widely varying prices, depending upon the irons and mixtures which can be adapted in the manufacture to the price to be realized.

6. Steel precisely of the same quality as well as designation is sold to different persons at different prices, according to the quantity taken, the desirability of the sale, and the comparative shrewdness of buyer and seller. The sales in Sheffield are at higher rates than to the United States, because the former are small and treated as retail sales, while the latter are mostly wholesale transactions.

7. No market price of cast steel can be established from quotations, which are at much higher rates than actually paid, nor from actual sales, which are as variable as are the designations and the wants of the markets to which the goods are sold.

8. The appraisement of any given bar of steel is a pure matter of guess work, because steel of different qualities bear an undistinguishable resemblance, the manufacturers themselves being unable to tell the value of their own steel if the marks are removed, and if they are unable to refer to the prices of the materials used in its manufacture.

9. The discount deducted from consignments of steel to the United States by the principal Sheffield exporters is now uniformly ten per cent. in lieu of lower rates formerly adopted by the same firms, and still adhered to by smaller manufacturers, which discount is supported by sales of steel of same designation at same rates.

10. Steel made from the best brands of iron can be made to look as coarse in the grain and in all other respects similar and even inferior in appearance to common descriptions made from cheap materials, the difference being only discernible by the consumer who uses it for a particular purpose.

11. The diversion of the steel trade from New York to Boston grows out of the fact that it is impossible for merchants, manufacturers or appraisers to reconcile the various qualities, designations and values of steel, and that the appraisers at Boston accept the invoice prices and discounts, while the appraisers at New York question their accuracy.

12. All these difficulties arise inevitably from time to time owing to the peculiar nature of the steel trade as above set forth, and the utter hopelessness of adapting the multiform qualities of cast steel to the present tariff.

RECOMMENDATIONS.

The steel question has been examined many times in the most thorough and impartial manner, and the conclusions arrived at have invariably amounted to the same result, viz., that there is no market price for a manufacture which is ever varying, arbitrarily called cast steel, cast steel warranted, best cast steel, and extra cast steel, etc., and which comprises endless minor designations. I have pointed out that the manufacturer names his steel and prices it as he pleases, that the purchaser is obliged solely to trust to the conscience of the seller, that the manufacturer cannot value either his own or his rival's steel by appearance alone, and that the customer, helpless as he may be in buying steel, is far less at the mercy of the maker than the customs officials, to whom the consideration of future transactions does not apply. While there is every motive for treating the purchaser liberally in the hopes that he will appear again with further business, there is the reverse in dealing with the appraiser, and the latter as well as the former are incapable of valuing definitely otherwise than by weight.

The difficulties continue to recur with every fluctuation in the market price of crude materials or labor, and I can see no hope of ameliorating the position unless some speedy change of the tariff laws as regards importations of best cast steel be effected. The question naturally arises, "What should be the nature of the change desired?"

As to this, if *ad valorem* duties are to be continued, I would respectfully recommend the adoption of the rule that all steel should not merely be labeled, but stamped *hot* with the maker's name, and particularly the designation and purpose for which it is manufactured, for instance: Best cast steel for tools, best cast steel for dies, best cast steel for axes, best cast steel for files, etc.

It will be seen from the accompanying samples that German steel, as well as other descriptions of cheap steel, very closely resemble best cast steel, and that the high-priced qualities of best cast steel very closely resemble steel at 10/, 20/ and even 30/ lower in price. There is nothing whatever to prevent steel of high value from being invoiced as a cheap article, and there can be no doubt that with such facilities for false designation advantage is taken thereof and unsuspected by the customs officials, whose attention is necessarily occupied in ascertaining the market value of the designation invoiced, they being utterly unable to discern from the article itself the value of the materials from which it was made. The greatest danger to the revenue, therefore, evidently lies in the matter of designation, and not in the question of value, seeing that for a considerable period the descriptions in dispute, if correctly designated, have paid the higher rate of duty.

I forward herewith (Exhibit M) a copy of the draft of a bill relative to duties on imports of steel prepared in 1870 by Mr. George J. Abbott, then United States Consul at Sheffield, upon suggestions by Mr. Benzon and others. It is the only practicable classification of steel, assuming that there should be varying duties. As I believe this document has never been submitted, I respectfully invite the attention of the department thereto. There is but one loop-hole for fraud, and that is the invoicing of best cast steel as German steel, the duties upon which would have to be identical; as even specific duties would be of no avail, if, while remedying undervaluations, there remained a possibility of false description. The duties upon cast steel should be regardless of quality, price and the many arbitrary designations invented by the trade.

CONCLUSION.

I have in this investigation necessarily accumulated a vast amount of data, manuscript and documents, from which the various statements referred to in the summary, as well as many of those included in the consular reports, have been constructed. I have, where practicable, condensed the information obtained into tabular statements, so as to place everything in a light as clear and concise as possible, with as much brevity as is consistent with the importance and magnitude of the subject.

I have examined the case carefully and impartially in all its details, with the advantage of unusual facilities, and it is my belief that specific duties offer the only solution to the question, and that for the effective application of any system of duties, there must be such classification as will enable any official to assign, at sight, any given specimen of steel to a definite class, without regard to invoice designations, or even to marks upon the steel itself.

The system of levying *ad valorem* duties upon cast steel, while fraught with great danger and annoyance to the honest importer, gives every facility for defrauding the government to unscrupulous traders, who have more facility for deception in this than in any other class of dutiable goods.

On the contrary, specific rates would protect the honest importer, do away with all the suspected fraud and trickery, promote the interests of the revenue, and facilitate the collection of the duties.

I have made very careful and complete inquiries relative to the duties upon steel in all the countries of Europe, and a tabulated statement of the same is respectfully submitted herewith (see Exhibit W). Printed tables of duties in some of the principal countries and colonies out of Europe will also be found herewith (see Exhibit Z, No. 6). The United States appears to be the only principal country where *ad valorem* rates upon steel are applied. I find upon inquiry that in the customs department of those countries where duties are assessed according to value, that the invoice prices are taken upon a mere declaration, as the only alternative, and the only indication of such

value.''As will be seen from the extracts of European customs tariffs accompanying Exhibit W, the principal countries of Europe adopt specific rates with readily distinguishable classifications, as it has been found by repeated experience that *ad valorem* appraisements and denominations according to quality are altogether insufficient, and incapable of practical working.

The Iron and Iron Ore Interests of New Jersey—The Past and Present Times Reviewed.

BY A CITIZEN OF NEW JERSEY.

PART III.

The increased make of iron which was so promising in 1842–43, was almost stifled by the Tariff act of 1846, for a permanency of the system had been expected, which led many enterprising men to embark in new iron works, aided by new capital from many sources, amounting to a vast sum in the aggregate for those times, and the iron interests, as well as every other, of the whole country, received a back set of at least ten years. Yet the iron and iron ore interests of New Jersey bore up under it as well or perhaps better than any other portion of the Union. This was, as I believe, owing to the proximity of her iron ores and limestones to the coal measures and the great markets of the country, New Jersey having the magnetic ores nearer to the anthracite coal fields than any other portion of the country, and had at that time tolerable good transportation facilities by water, through the Morris Canal and the canal system of Pennsylvania, giving an outlet for her iron ores and an inlet for the coal. This, with the more recent construction of the Morris and Essex and Central New Jersey Railroads and their branches, has so stimulated the mining interests of the State that the annual yield of the mines now worked reach nearly 700,000 tons, and they are capable of producing much more. But the fact must not be overlooked that as each year that quantity is taken from the mines so much less remains, and that as we go deeper the cost of mining is increased, just in proportion to the amount of water to raise, the cost of increased power and machinery and the amount of dead work to be done.

There are at present some 200 mines opened in the State, yielding from a few tons each to 100,000 tons annually, the Mount Hope mine, Morris county, ranking first in production, followed by Oxford, Ogden, Ringwood, Dickerson, Allen, Baker, Hibernia, Richards, Hurdtown and other mines, yielding from 10,000 to 30,000 tons yearly, as the works using ores there from may require.

Within the past four years new and valuable discoveries of rich veins of ore have been made in the Chester and Pequest valleys, admirably adapted, it is believed, for making an iron suitable for Bessemer steel. Some of these discoveries have been opened and are now worked, one in Chester Valley by Messrs. Taylor & Co., of High Bridge, N. J., and one or two in the Pequest Valley by the Lehigh Crane Iron Company, of Catasauqua, Pa. The ore in each of these localities is very cheaply mined, and contains a high percentage of metallic iron, and from these two company's openings there could be raised easily, if required, 100,000 tons yearly. Other discoveries made in the Pequest Valley will soon be brought into requisition, both on account of the low cost of mining and their value for the purpose of making steel, which is now becoming so important an item in the railway system of the country.

I will annex at the close of this letter, for the general information of the public, analyses of ores from several of the new and some of the old openings in the Pequest Valley, made under the supervision of Professor George H. Cook, of the State geological survey, and other metallurgists. Their remarkable conformity in analysis to the Dannemora and other highly valued iron ores of Sweden will be seen at a glance.

Few iron makers seem aware of the importance of the quality of iron ores in determining their success in the trade. Fuels are much the same everywhere, as are also the manipulations used in producing all of the varieties or kinds of iron or steel, and while ores of iron are so almost universally diffused over the earth's surface, it is a most remarkable fact that iron ores having a very high reputation for either iron or steel exist comparatively in so few localities in the world. One variety is too red short, another is too cold short; this one has this bad property and that one contains some other bad property. Science has long sought, and will doubtless continue to make exertions to find some plan to eliminate the noxious properties of iron ores. This difficulty has already been partly overcome, but the old rule holds good to "use best first, and thus have best always."

Meantime, the consumption of iron ores goes on exhausting to some extent the mines now worked, while as the population of the country rises from 38,500,000 in 1870, using at that time over 3,000,000 tons of iron and steel annually, to a population of 80,000,000 in 1890, as is estimated, it is pretty safe to estimate the consumption of iron and steel to exceed 6,000,000 tons annually, unless for some reason yet unknown there should be a falling off in its use in constructing vessels and buildings, or unless by reason of the great saving to be effected by using steel in place of iron rails on the railroads of the country. It may be very safe to estimate the national production in 1890 at about that quantity.

One thing is certain, that the country now has some 75,000 miles of railroads which must be maintained, and to do which will require iron and steel. Perhaps too many railroads have been constructed in a brief space of time, yet with the growth of the country many more will be added to them; even the older portions of the country are not nearly fully supplied, as is well known. In nearly all of the railroads hitherto built iron rails have been used, and it is estimated that over 7,000,000 tons of rails are now laid and in use in this country. It is also evidently the true policy of the railroad companies, as fast as they are able and can do so, to replace iron with steel. And assuming that if even one-half of the roads now constructed, with the same proportion of the new ones to be built, adopt steel rails, and that the average life of the steel rails is eight years, it is at once apparent that the future of this industry will be one of great magnitude.

There are in this State 13 blast furnaces completed, viz.:

	Yearly capacity.
3 at Phillipsburg, Warren county, Andover Iron Co.	35,000
2 at Oxford, Warren county, Oxford Iron Co.	16,000
1 at Oxford, Warren county, Pequest Iron Co.	7,000
2 at Stanhope, Sussex county, Musconetcong Iron Co.	28,000
1 at Franklin, Sussex county, Franklin Iron Co.	15,000
1 at Port Oram, Morris county, Pardee & Co.	10,000
2 at Boonton, Morris county, Fuller, Lord & Co.	20,000
1 at Ringwood, Paissic county, Cooper & Hewitt	7,000
13	138,000

Having a capacity to produce, as above set forth, nearly 140,000 tons per annum. Two others are building—one at Hackettstown, Warren county, and one at Seacaucus, Hudson county, which will add an annual productive capacity of about 20,000 tons more.

It will be seen that these new and large furnaces recently erected, and those now being built, will consume a large proportion of the ores annually mined in the State, and it is quite probable that more furnaces will be built in New Jersey, near to where the ores are mined on the lines of railroads and canals now completed and shortly to be constructed, for it is a fact easily demonstrated that in the manufacture of pig iron it is far better to move the coal toward the ores and a market than *vice versa*, the losses in wastes and cost of handling and rehandling being much less on the coal than on the ores. This fact has already determined some locations, and will, doubtless, have much to do with the establishing of iron works in the State hereafter. In the near future the prudent iron master, with the great home competition which is likely to occur in our country, will be apt to look sharply for *location*, or where the first cost of the most important item—iron ores—are least, where all the stock used meets most economically, and where the rate on the finished article to a market is lowest—for so far as fuel is concerned, the price of coal to the furnaces using anthracite east of the Blue Ridge does not seem to vary more than from 50 to 75 cents per ton, whether it is used 40 or 100 miles from where it is mined.

Judging from the increased yield of the mines and product of iron in New Jersey for the past thirty-six years coming under the writer's own observation, as it has to a great extent—with an enlightened and broad policy on the questions of tariff and finance by our national government, and with the geographical position occupied by New Jersey—her nearness to tide waters and the two greatest cities on the Continent, and the near contact of her iron ores to the anthracite coal measures, I estimate that within ten years the annual yield of her iron mines will exceed twelve hundred thousand tons, and that the make of pig iron within her limits will reach three hundred thousand tons, which will probably place the State as the fourth iron and iron ore producing State in the Union.

Analyses of Magnetic Iron Ores from the Pequest Valley, New Jersey, and vicinity.	Insoluble Silicious Matter.	Oxide of Iron.	Alumina.	Oxide of Manganese.	Carb'nate of Lime and Traces of Magnesia.	Phosphoric Acid.	Carbonic Acid.	Sulphur.	Total.	Metallic Iron.
Kishpaugh & Potter Mines, Lehigh Crane Iron Co.	5·30	90·85	3·14	0·28	0·28	Slight Traces.	....	Slight Traces.	99·93	65·79
Howell, East Vein	8·75	81·86	3·50	1·75	2·75	"	....	"	98·20	58·31
Howell, West Vein	19·65	77·94	1·88	1·15	4·35	"	....	"	98·77	56·44
Green Farm Vein	21·76	73·71	1·90	·07	·35	"	....	"	98·88	54·82
Cummins, 1st Vein	81·15	67·24	1·06	·07	·35	"	....	"	100·88	48·20
Cummins, 2d Vein	6·26	90·40	2·48	·07	·35	"	....	"	99·450	65·47
Cummins, 3d Vein	8·25	87·73	2·50	·07	·35	"	....	"	98·813	62·83
Welsh Farm	7·25	81·17	1·15	8·08	24·10	....	27·20	....	100·	58·57
Wallrock of the Howell West Vein	1·25	10·85	1·19	15·16	30·96	....	·40	·15	....	7·64
Andover, No. 1	5·80	....	....	....	Mag'n.	....	....	....	....	8·55
No Name Mine	·40	96·85	....	1·25	Mag'n. 1·31	....	....	·04	99·75	70·00
Andover, No. 5	6·90	....	....	13·85	Mag'n. 82·81	....	....	....	97·86	49·80
No Name Mine Wallrock	1·00	9·50	....	2·60	52·96 Mag'n. 3·9	....	....	....	....	....
Franklin Furnace, N. J.	1·00	79·00	....	9·05	·02	·0	7·06	....	....	57·02
Oxford, New Mine	4·08	88·01	....	....	....	....	....	....	103·08	71·00
Oxford, Car Wheel Vein	7·8	92·06	....	trace	....	....	....	....	100·08	77·00
Franklin Vein (Oxford)	16·08	82·08	....	....	....	....	....	0·1	99·07	59·06

The analysis of ores from several other farms and openings are so like above that it is not worth while to copy them.

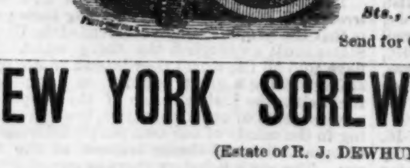
There is a steadily growing export demand for American machinery. The Burleigh Rock Drill Company, of Fitchburg, Massachusetts, have just shipped three large air-compressors to furnish motive power for running drills and pumps in the sliver mines among the mountains of Peru and Chili. Some American locomotives and some machinery have been sent thither previously, and chiefly to Callao and Valparaiso. Locomotives and machinery have gone to Rio Janeiro; axes and saw mills up the Amazon; sugar mills and evaporators to Buenos Ayres; gas fixtures and chandeliers to St. Petersburg; passenger railway cars and saws to England and the continent; arms to the same destination; scales and sewing machines everywhere. And thus, step following step, a beginning is even now made in some departments sufficient to show that foreign appreciation of our manufactures is great enough to promise them a market when the conditions of labor and living are such that we can fill it.

Bronces Incrustes.

This is the name given to a new style of bronze or copper work ornamented with gold and silver, and manufactured by Christofle & Co., in Paris. The ornamentation is produced by etching and electroplating, and consists, according to Dr. Meidinger, in the following operations: After the object, which may be of massive copper or bronze, has received the desired form, the drawings are made with water colors, the body of which is white lead. If several pieces are to have the same design, it may be printed on as in porcelain and fayence painting. Those portions of the surface not painted are covered with varnish. The article is then placed in dilute nitric acid, where the paint is dissolved off and the surface of the metal is etched to a certain depth. When the etching is finished, the article is washed with water and immediately placed in a silver or gold bath, and a layer of the precious metal deposited by electricity on the exposed portions. When the latter operation is finished, the varnish is perfectly removed and the whole surface ground or polished so that the ornamented portion is just even with the remainder of the surface. The contours are quite sharp. The surface is then bronzed, which does not change the color of the gold or silver. A specially fine effect is obtained by producing a black bronze of sulphuret of copper on portions of the surface between the silver ornaments. A copper vessel then has three colors, black and white drawings on a red-brown ground of suboxide of copper. This new process for ornamenting metals has been devised at Christofle's works since the Paris exposition of 1867. Specimens exhibited at Vienna in 1873 show the high degree of perfection to which it has already been brought. Unfortunately these goods are so expensive as to be only accessible to the few, although much cheaper than those in which the engraving is done by hand, and the gold or silver inserted by mechanical means. The production of an incrustation requires a high degree of manual skill and patience, but no costly machinery. Every brass foundry contains all the necessary tools for the mechanical operations.

Important Meeting of Coal Operators.—Fears of a General Strike.—It is reported that the coal operators of the Lehigh, Upper Lehigh, Wyoming and adjacent anthracite fields met in Philadelphia a few days ago to consider the fixing of the basis of wages to the miners for 1875. The following gentlemen are represented to have been present: Ario Pardee, Charles Parrish, president of the great Lehigh and Wilkesbarre Coal and Iron Company; S. Van Wickle, Nathan Willis, Dr. G. B. Linderman, Eckley B. Coxe, A. L. Mumper, I. H. Swoyer, A. Pardee, Jr., E. B. Ely, Judge Hamburger, A. B. Cox and I. C. Hayden. The conference was held with closed doors, but enough has been learned to show that the basis of next year is to be reduced, and that a general strike is expected. No positive action was adopted, but the general sentiment was for a lower basis. There is a general demand that the price of coal of all grades be reduced at least 50 cents a ton, but the operators contend that if a decrease is made there will be no profit left. The miners agree that the present wages are sufficiently low, and they will resist any attempt at lowering them by stopping work. Between 15,000 and 20,000 men will join in the threatened strike.

Boston Terminal Facilities.—The legislative committee for investigating the railroad difficulties at Boston, after careful study of the subject, have decided on the basis of a report. They will recommend, says the Springfield *Republican*, a junction road around Boston, from Waltham on the Fitchburg Road through Newton, Brookline and Jamaica Plain, piercing South Boston hights by a tunnel half a mile long and coming out upon the flats at tide water in such a location that connection can be made with the Lowell and Eastern Roads on the harbor side of the city, by laying tracks along some of the new avenues projected and building along the wharf line. In this way it is claimed that the freight business of the Fitchburg, Massachusetts Central, the Providence and Southern Roads, and the domestic freight of the Boston and Albany can be debouched in one yard, close to the docks, while freight destined to city consumption can be delivered at a point on some of the avenues within a mile of the post office. The plan avoids vexatious grade crossings and heavy land damages, and resembles in general the one proposed by Mr. Atkinson, though varying considerably in detail. The road will be 15 miles long, and steps are already being taken to frame a corporation to undertake its construction. By local improvements of this character, Boston is doing much to promote its commercial welfare, and give it a permanent hold upon such commerce as it has or may secure.



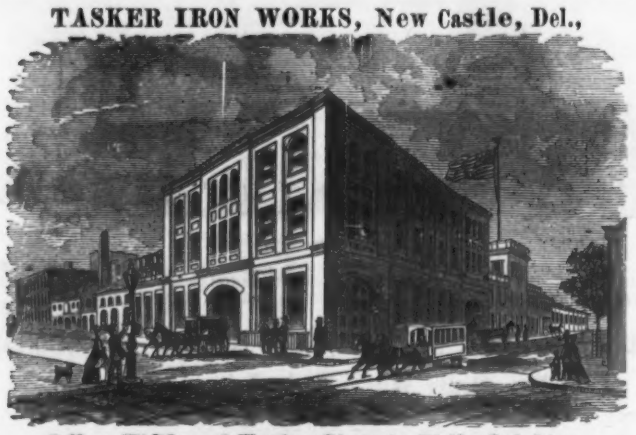
Pipe, Fittings, &c.

Thomas T. Tasker, Jr. Stephen P. M. Tasker

MORRIS, TASKER & CO.,

PASCAL IRON WORKS, Philadelphia,

TASKER IRON WORKS, New Castle, Del.,



Office, Fifth and Tasker Streets, Philadelphia.

Office and Warehouse, No. 15 Gold Street, New York.

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WROUGHT IRON WELDED TUBES,

Plain, Galvanized and *Rubber-Coated*, for Gas, Steam and Water.

Lap-Welded Charcoal Iron Boiler Tubes.

Oil Well Tubing and Casing, Gas and Steam Fittings, Brass and Steam Fitters' Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved Coal-Gas Apparatus, Etc.

Ecton Mills Genuine London TURKEY EMERY.

TRADE MARK.

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ABBOTT & HOWARD, Agents for the United States.

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BAILEY'S PATENT ADJUSTABLE PLANES

Thirty different styles in

IRON AND WOOD. 80,000 ALREADY IN USE.

Smooth Planes,
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Jointer Planes,
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Cabinet Makers,
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Machine Forged Nuts,	Magnetic Tack Hammers,	Carriage Steps,	Bench Saw Sets,
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Tin Washers,	Trap,	Body Loops,	Butchers' Cleavers,
Carriage Bolts	Elastic Base Knobs,	Box Hooks,	Nail Sets,
Machine Bolts	Steak Hammers,	Box Chisels,	Cork Screws,
Plow Bolts,	Boxwood Rules,	Tobacco Needles,	Ice Awls,
Stove Bolts,	Ivory Rules,	Table Nut Cracks,	Ice Axes,
Elevator Bolts	Plumbs and Levels,	Hasps and Staples,	Tinned Meat Hooks,
Tire Bolts,	Adjustable Plumbs and	Ox Bow Pins,	Can Openers,
Fancy Bolts,	Levels,	Bull Rings,	Patent Boot Jacks,
Bolt Ends,	Pocket Levels,	Cattle Leaders,	Wood Handle Cover
Coach Screws,	Wagon Jacks,	Boxwood Wheel Sash	Lifters,
Turn Buckles,	Axle Clips,	Pulleys,	Hickory Bung Starts,
Blacksmiths' Hammers.	Saddle Clips,	Coopers' Rivets,	Lignumvitæ Mallets,
Riveting Hammers,	Fifth Wheels,	Carriage Rivets,	Tin Spoons,
Machinists' Hammers,	Shaft Couplings,	Boiler Rivets,	Brass Ferrules.
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The "EMPIRE" Fan Blowing Portable Forges,

With or without Hood.

(Patented Nov. 25, 1873.)

WITHOUT BELTS OR BELLOWS.

It is more Easily Worked, gives a Better Blast, and is the Cheapest Forge made.

☞ **IT HAS NO BACK DRAUGHT.**

Manufactured by W. P. KELLOGG & CO., Troy, N Y.

Also **Curry Combs, Boring Machines, & Cooley's Whip Racks, etc.**

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Pipe, Fittings, &c.

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Best Quality Lap Welded Iron Boiler Tubes,

STEAM AND GAS PIPE,

Artesian Oil and Salt Well Tubing and Casing,

With Patent Protecting Coupling;

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For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

PLUMBERS' MATERIALS.

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WROUGHT IRON PIPE

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PIPE CUT & FITTED TO PLANS FOR MILLS &c.

CONTRACTORS

FOR HIGH & LOW PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

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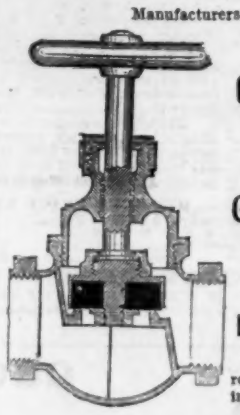

Jenkins' Patent

Compression Valves

AND

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Also,

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LUBRICATOR.

Warranted the most reliable and durable in the country.

CAST IRON PIPES

FOR WATER AND GAS.

Branches Retorts, &c.

Warren Foundry & Machine Co.,

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WHEATCROFT'S

SELF-ADJUSTING PIPE WRENCH.

Forged from Best Tool Steel.

The dog is solid over the head of the lever bar, taking the strain off from the pin.

Each Wrench takes four Sizes of Pipe.

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STEAM VALVES,

Iron and Composition, of all sizes.

WATER and GAS Gates, 3 to 48 inches

HYDRANTS.

Office and Warehouse, 75 & 77 Kilby St., Boston, Mass.

TURNED

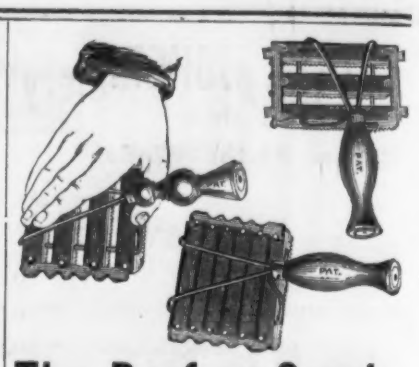
MACHINE SCREWS,

One-sixteenth to five-eighths diameter. Heads and points to sample.

IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

Cor. 1st and North 3d Streets, Williamsburgh, N. Y.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.

Factory and Office,

382 2d Ave., cor. 22d St., N. Y.

WILLIAMS WHITE & CHURCHILL,

Successors to

MACKRELL & RICHARDSON MFG. COMPANY

Manufacturers of

Builders' Hardware,

Locks, Hinges, Hooks and Staples,

Awning Hooks, Meat Hooks, Pincers,

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Sole Manufacturers of

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Pumps, Water Closets, Fountains, Vases, &c.

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R. D. WOOD & CO.,

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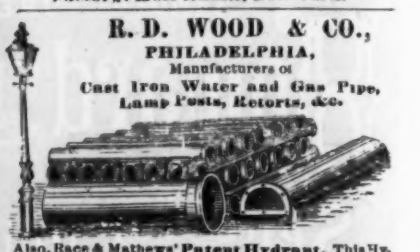
Cast Iron Water and Gas Pipe, Lamp Posts, Retorts, &c.



Also, Race & Mathews' **Patent Hydrant.** This Hydrant is perfectly anti-freezing, is the most ornamental and the cheapest made.

R. PAINE, Selling Agent, Office, 128 Broadway N. Y.

GEORGE BARNES & CO.,

Manufacturers, Syracuse, N. Y.

DRILLS,

Pipe Tongs,

Pipe Cutters,

Pipe Threaders,

Flue Brushes.

M. D. CONVERSE & CO.,

68 Park Place, N. Y.

The Iron Age Directory

and index to Advertisements.

The Coppee Coke Oven.

The essential feature of the Coppee system is the coupling of the ovens in pairs, so that the gases from the one mingle with those of the other, and burn the coke at a much higher temperature than could otherwise be the case, the arrangement having also the important effect of maintaining this intense heat constantly and uniformly throughout the group; but there are other characteristics which are of considerable importance. Amongst these are the double admission of air, so as to facilitate combustion, the result being the entire prevention of smoke; their small width and an arrangement of channels especially suited for poor coals; the combination of all the hot gases in a large conduit beneath the ovens, and their utilization for heating boilers, and the galleries for cooling and preserving the brickwork. It will thus be seen that by the Coppee system of constructing coke ovens a large surface of small coal is exposed to a very high temperature. This high temperature is always maintained, varying only very slightly at any time. Consequently there results, firstly, rapidity of operation. One Coppee oven will turn out at least as much as two ordinary bechive ovens. This is easily understood when it is remembered that the coke from the Coppee oven is cooled outside, and the oven refilled in a few minutes. The coal, falling into a narrow chamber raised to an intense heat by the previous charge, commences burning on all sides at once, and, being very fine, it is in the best condition for giving off its gases rapidly. By the arrangement of the flues and the plan of discharging alternately, the cool gases given off by the oven just filled promptly mingle with those of the neighboring oven, which by this time is giving off its gases at their highest temperature. The mingling of the gases raises the temperature of the one oven almost immediately to that of the other, thus a very high and uniform temperature is maintained. The thin layer of small coal burns on all sides at once, the volative gases are rapidly expelled, and the oven is ready to be drawn in one-third the time required by the ordinary ovens.

The advantage of keeping the ovens constantly heated will be readily understood. Usually the oven is cooled after each charge has been coked, the next charge being necessarily thrown into a cooled oven. A vast quantity of heat is absorbed in raising the temperature of the oven sufficiently to coke the coal; the volatile gases escape directly into the atmosphere, and do very little toward burning the coal, which in these ovens is chiefly effected by the combustion of a portion of the fixed carbon. The coal commences to burn at the top, it cokes gradually downward, part being completely burnt away before the rest is ready, hence the loss in yield. In the Coppee ovens a thin layer of ground coal is introduced into an oven already in an incandescent state, the coal is attacked on every side at once, the volatile gases of neighboring ovens mingle and are consumed in flues all round, keeping up the high temperature. The entire contents of the oven are coked all together before any of the fixed carbon has been burnt. Within 2 per cent. of the theoretical yield can be obtained in the shape of coke. The third result is an improved quality of coke. Only a little reflection will render it apparent that the high and even temperature to which a thin layer of coal reduced to small particles of equal size is submitted by the Coppee system will bake the coke harder and denser than the old ovens will. Presuming that the coal from which it is made is clean, hardness and density are the tests of quality in coke which has to be subjected to a blast, and to bear a weight of metal in a furnace.

The Coppee system is likely to be as well received by the workmen as by their employers, for, although there is a slight saving in labor, it would not lessen the number of hands to be employed, while the advantages which the master will secure in other directions will entirely obviate the necessity of lowering the wages of the men. For the utilization of the waste gases for the production of steam the Coppee ovens are particularly adaptable. No extra expense is required to the ovens themselves for flues, &c. There is only the ordinary cost of boiler and chimney, which can be added to a group of ovens at any time. The quantity of steam produced varies with the quality of coal and the system of boiler. From 2 to 4 horse-power per oven can be obtained. Experience on the Continent has shown that some qualities of coal, which are not sufficiently bituminous to coke in ordinary ovens, will coke in the Coppee ovens. There are seams of coal in England and Scotland of which the small coal will not coke, but which might probably be utilized for this purpose if treated on the Coppee system; and, although upon comparing the first cost of the ordinary and of the Coppee oven, the first cost of the latter is nearly double, this is much more than compensated for by the fact that the Coppee oven produces 2¾ the quantity of coke in a given time. The Coppee has, moreover, the important advantages of occupying but one-fifth the space, and that the Coppee oven can be emptied and refilled in eight minutes, while the ordinary oven requires over sixty minutes. The coke produced by the new system is firm and dense, the proportion of breeze and refuse is materially reduced, and the general cost of the labor charge per ton of coke made (11d. as compared with 1/3) scarcely exceeds two-thirds. Owing to the quality of the materials, the very regular action and the non-application of water inside the ovens, the cost of repairs is very small, and it is stated that a block of ovens in Belgium, which has been 12 years at work, has cost less than 7/ per oven per annum for repairs.

As the gases evolved from the coal when the Coppee oven is used are all entirely consumed, any nuisance to the neighborhood, either from smoke or otherwise, is entirely avoided, and the facilities which these ovens offer for the consumption of slack—the coal being, as already mentioned, used in the form of powder—will be recognized as an important advantage.

Another Mill River Accident.

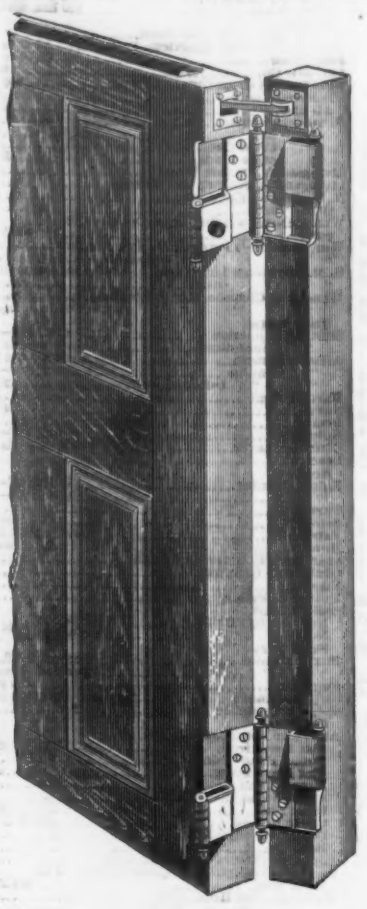
Messrs. Hayden, Gere & Co., the enterprising manufacturers of brass goods, at Haydenville, Mass., have had another misfortune in the bursting of the new dam built to replace the one carried away by the great Mill River flood of last May, which also swept away their works. Fortunately this accident was accompanied with no loss of life. The dam was only lately completed, and cost about $6500. It was built by John Delaney & Sons, of Holyoke, from plans by Mr. E. C. Davis, of Northampton, and the cause of the disaster is entirely unknown. It was first ascribed to the greenness of the cement, but that theory is not sustained, because the break did not occur where the cement was greenest, but some distance from the last gap, filled in with masonry; nor was it caused by an extraordinary pressure of water, for the water was hardly as high as usual—certainly not as high as it was a few days ago. The dam is built on hard pan; the foundation appears to be broad and firm, and the superstructure does not seem open to criticism. The dimensions given by the contractors are: Length, 140 feet; width, 13 feet at the base and 6 at the top. The material used was granite, and the finishing was a coping of cut granite. The water side of the dam was faced with cement, and either end was flanked by a parapet wall about 18 feet high. The work of construction was carefully supervised by an inspector specially charged by Mr. Hayden with that duty. The theory now generally accepted is that the ice formed on the dam cracked the cement and loosened the stones. Anticipating this objection, the contractors claim that the cold cracked the stones, rather than the cement. They say that if the ice had been kept cut away, the dam would have stood. It was the wish and intention of Messrs. Hayden, Gere & Co., that the dam should be strong and good, at whatever cost, and so it was believed to be when it was accepted by their engineer. Probably the dam will not be rebuilt before spring, as the proprietors have no immediate use for water-power. The rebuilding of the factory has advanced only as far as the completion of a new foundry building, 102x40 feet, and two stories high, while the work on the coal house and pattern shop is well advanced. The main building of the works, which is to be 335 feet long and three stories high, was to have been erected in the spring; but it is feared by the inhabitants of the village that the firm will be discouraged by this second disaster and give up the building project there.

Keystone Saw, Tool, Steel and File Works.

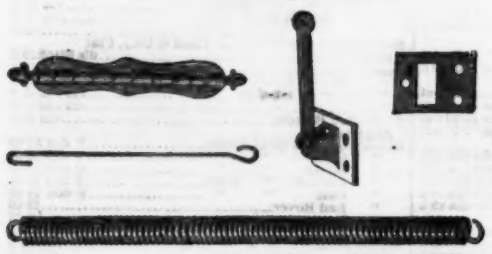
Front and Laurel Streets, Philadelphia.

MANUFACTURERS OF

Barker's Patent Double Reversible Joint Butt Hinges and Concealed Door Springs.



View of Door with Hinges and Spring in position.



Concealed Spring.

THE BEST IN THE UNIVERSE, ALWAYS RELIABLE.

They never get out of order, and give unbounded satisfaction wherever they are used.

HENRY DISSTON & SONS desire to call the attention of the Hardware Trade; also Architects, Builders, Carpenters, and all parties interested, to the

PATENT REVERSIBLE BUTTS

represented in the annexed engravings.

For the doors of Churches, Schools, Theatres, Banks, Factories, Public Buildings, Hotels, and all places where it is necessary or desirable to swing a door both ways, these Hinges are vastly superior to all others. The neatness of the Butt and the simplicity of its construction make it far more desirable than most of the uncouth and unwieldy hinges now in common use. The concealed spring is the strongest, most durable, and the simplest, consequently the least liable to get out of order.

It is the *neatest*, and being concealed, does not present that unsightly appearance which usually so disfigures doors that have Springs.

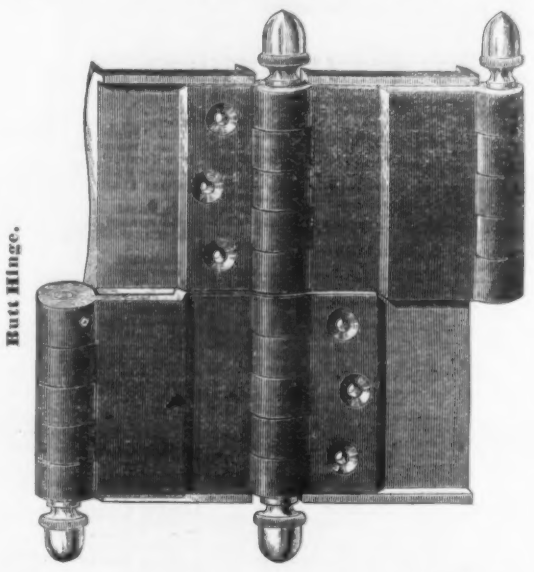
It relieves the Butts of the weight of the door, and consequently adds to the strength.

It prevents the door from sagging.

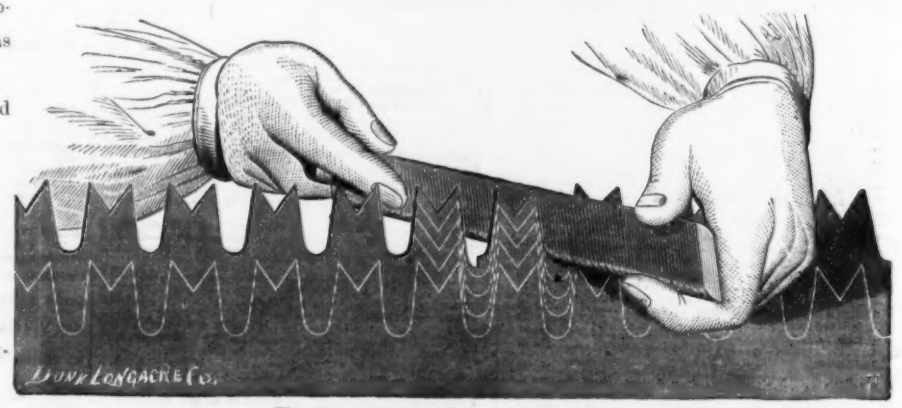
It is more readily applied and easily disengaged, and is altogether the most effective, convenient and elegant Spring that has ever been offered to the public.

Every Spring has been thoroughly tested, is warranted, and will bear twice the strain that is ever applied to a door.

It is by far the cheapest.



Butt Hinge.



The above engraving represents a section of "Lumberman" Cross-Cut Saw, with File specially adapted for keeping said Saw in order. By using the File here illustrated, with the edge made to fit the gullet or space between the Teeth, and pressing downward while filing, you will preserve the original shape of the Teeth as described by dotted lines and notch in engraving. You pay for the edge of the File as well as the flat—then why not use it? and thus keep your Saw always gummed and in order, and avoid the risk of breaking or buckling the Saw by the old method of gumming. This File is manufactured expressly for the purpose of keeping in order the Teeth of our Improved Saws known as the Climax and Lumberman, and can be used with equal facility on either Saw. If the File be used according to our instructions, viz.: pressing down in the gullet at the same time the edge of the Tooth is being filed the effect will be so convincing that persons will never return to the use of the old style File, or any other of the so-called Improved Teeth. We also manufacture a File for keeping the Great American and Climax in order.

Cross-Cut Saws.

We desire to call special attention to our various styles of Cross-Cut Saws represented in this week's issue.

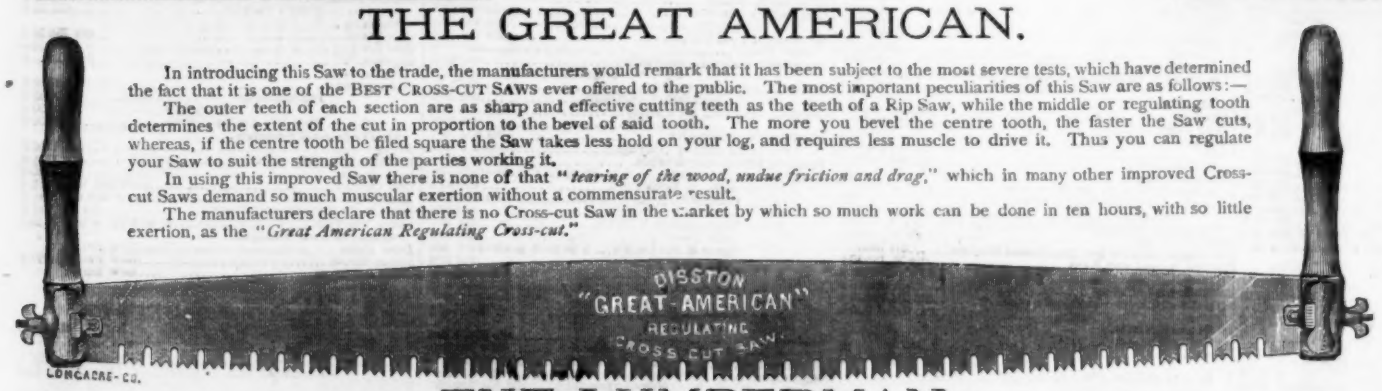
THE GREAT AMERICAN.

In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the BEST CROSS-CUT SAWS ever offered to the public. The most important peculiarities of this Saw are as follows:—

The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faster the Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.

In using this improved Saw there is none of that "*tearing of the wood, undue friction and drag*," which in many other improved Cross-cut Saws demand so much muscular exertion without a commensurate result.

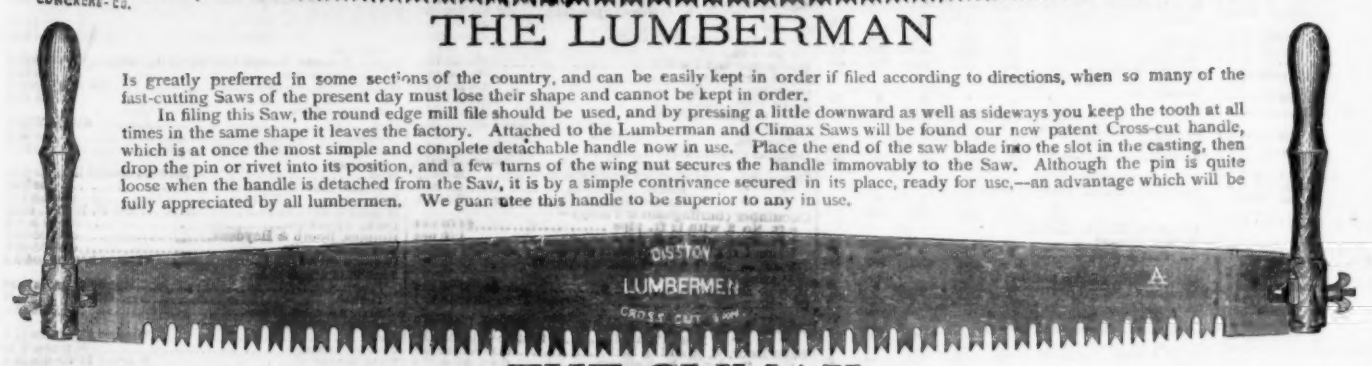
The manufacturers declare that there is no Cross-cut Saw in the market by which so much work can be done in ten hours, with so little exertion, as the "*Great American Regulating Cross-cut.*"



THE LUMBERMAN

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

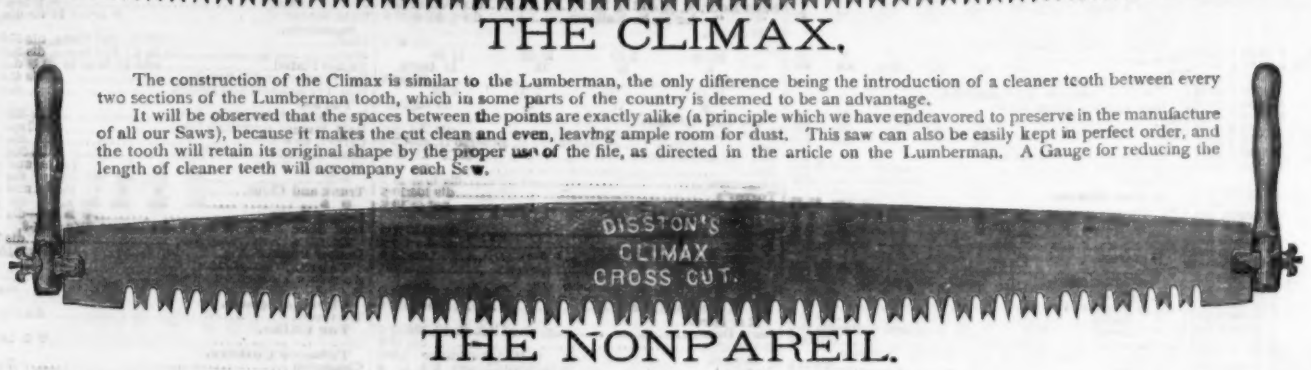
In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle, which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, then drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is quite loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use,—an advantage which will be fully appreciated by all lumbermen. We guarantee this handle to be superior to any in use.



THE CLIMAX.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

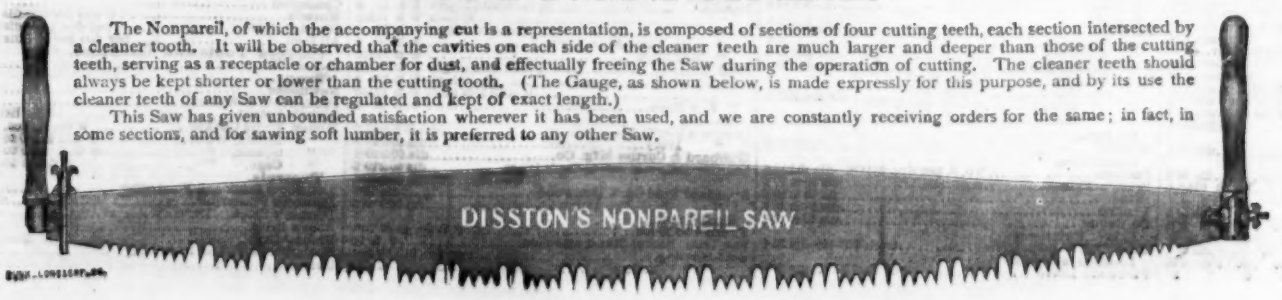
It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.



THE NONPAREIL.

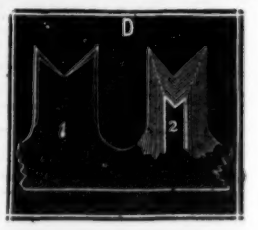
The Nonpareil, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptacle or chamber for dust, and effectually freeing the Saw during the operation of cutting. The cleaner teeth should always be kept shorter or lower than the cutting tooth. (The Gauge, as shown below, is made expressly for this purpose, and by its use the cleaner teeth of any Saw can be regulated and kept of exact length.)

This Saw has given unbounded satisfaction wherever it has been used, and we are constantly receiving orders for the same; in fact, in some sections, and for sawing soft lumber, it is preferred to any other Saw.

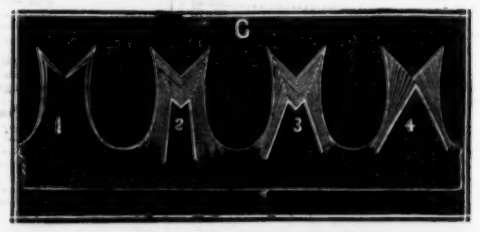


In the manufacture of all our Fast-Cutting Saws, we have carefully avoided the pernicious and destructive practice of making **Under-Cut Teeth.**

All Saws made on this principle are miserable failures. It is simply applying a Rip Tooth to the purpose of cross-cutting, an idea which has been long ago exploded. To get an **Under Cut,** the Tooth must be wider at the extreme point than at any other part, and each successive filing must result in rapid reduction in the width and ultimate loss of shape, as shown in the annexed diagrams.

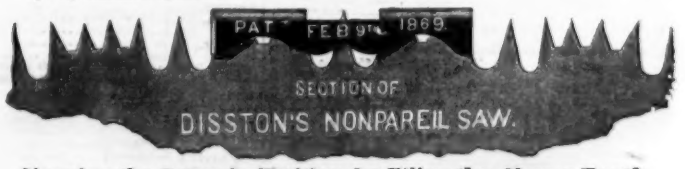


No. 1, Fig. C, represents the undercut Tooth as it leaves the factory; Nos. 2, 3, and 4, Fig. C, show how No. 1 most ultimately become under any style of filing that may be adopted. No. 1, Fig. D, shows a tooth with parallel edges, and No. 2, Fig. D, shows the shape of said tooth after several filings. The white lines on the diagrams represent the successive cuts of the file.



GAUGE FOR REGULATING CLEANING TEETH.

The Cleaning-Teeth of all Saws should be somewhat shorter than the Cutting Teeth, and, although shortened, they should be of uniform length throughout. The inner edge of the Gauge rests on the points of the Cutting Teeth, the Cleaning-Teeth projecting through the opening in center of Gauge. Reduce the projecting points by means of a File until arrested by the edges of the Gauge, which is made of hardened steel. Thus Tooth after Tooth can be rapidly and correctly reduced to an even length by any unskilled operator.



Showing the Gauge in Position for Filing the Cleaner-Tooth.

Henry Disston & Sons.

New York Wholesale Prices, December 23, 1874.

HARDWARE.

Anvils.
Solid Cast Steel ... ℘ lb 14c
Wright's ... ℘ lb gold 11½c; over 250 lbs 12c, gold
Armitage's Mouse Hole ... gold 11c
Wilkinson's ... ℘ lb gold 11c
Eagle Anvils, ℘ lb 11c currency ... dis 15&10 %

Apple Parers.
Domestic / Turn Table / Lightning / Hudson's / Reading / Union / Skeleton Paring, Coring and Slicing ... $7 @ 9 ℘ doz
Turn Table, old style ... $6·75 dis 10 %
Bay State, Paring, Coring and Slicing ... $15 00 dis 10 %
Climax Slicer ... 8 00

Augers and Bits.
Douglass / Ives / Beecher (French, Swift & Co) / Griswold / Noble ... 1st quality ... dis 40 %; 2d quality ... dis 40&5 %
Challenge ... dis 40&10 %
Snell Mfg. Co ... dis 15 @ 20 %
Russell Jennings ... dis 10 %
Lewis' Single Twist Bits ... dis 30 %
Andrews' Bits ... dis 25 %
Cook's Bits ... dis 40&10 %
" Augers ... dis 50 %
Expansive Bits, Clark's ... $18 @ $26—dis 15 %
" " Ives' ... $20 @ $30—dis 20&10 %
" " Blake's ... $20—dis 25&10&10 %
Hollow Augers, Douglass' ... dis 25&10 %
" " Ives' ... dis 25&10 %
" " French, Swift & Co ... dis 25&10 %
" " Bonney's Adjustable ... ℘ doz $48—dis 25 %
" " Stearns' " ... ℘ doz $48—dis 25 %
" " Ives' Expansive ... each $4·50—dis 40 %
" " Cushman's Expansive ... dis 20 %
Double Cut Gimlet Bits, Shepardson's ... dis 20 %
" " Hartwell's ... dis 50 %
" " Douglass' ... dis 20&10 %
" " Ives' ... dis 25 %
" " Ladd's ... dis 50&10 %
Griswold's Patent ... dis 20 %
Gimlet Bits—Screw, $7·50; no screw, $9 ... dis 40 %
Morse's Bit Stock Drills ... dis 20 %
L'Hommedieu's Ship Augers ... dis 15 %
Watrous Ship Augers ... dis 15 %
Vaughan's Post Hole—
6 in. $28 60; 9 in. $25 per doz ... dis 20 %

Awls and Tools.
Aiken's ... dis 25 %
Nos. 42 and 43 ... dis 35&10 %
Clark's ... dis 30&10 %

Axes.
Brook's ... per doz $12 00 @ 14 00 net
Blood's ... per doz $12 00 @ 13 00
Hunt's ... ℘ doz $12 50 @ 14 00
Collins' ... ℘ doz 11 00 @ 15 50 net @ dis 5 %
Hurd's ... ℘ doz 11 50 @ 12 50
Simmons' ... ℘ doz 11 00 @ 11 50
Morris' ... ℘ doz 12 50 @ 13 50
Red Jacket ... ℘ doz 12 00 @ 12 50
Mann's ... ℘ doz 11 50 @ 13 00
Double Bitted ... ℘ doz 21 50 @ 22 00
Underhill's ... ℘ doz 12 00 @ 13 00
" Crown ... ℘ doz 12 50 @ 13 50
John Leverett's ... ℘ doz 12 50 @ 15 50
Ten Eyck ... ℘ doz $11 00 @ 12 50 net

Balances ... dis 40&10 %

Bands.
Plated ... new list dis 50&5 %
Iron Rim ... new list dis 25&5 %
Brass (Plated list) ... new list dis 50, 10&5 %
Oroide ... new list dis 50&5 %

Bells.
Hand, Light Brass ... dis 65&5&10 %
" Extra Heavy ... dis 40&10 %
" White Metal ... dis 50&10 %
" Silver Chime ... dis 15&10 %
" Swiss ... dis 25 %
" Globe ... dis 15&10 %
Gong, Abbe's ... dis 15&10 %
" Yankee ... dis 30&10 %
" Barton's ... dis 33⅓ %
Crank, Taylor's ... dis 25 %
" Crook's ... dis 50 %
" Cone's ... dis 10 %
" Connell's ... dis 50&10 %
Lever, Sargent's ... dis 50&10&10 %
" Taylor's ... dis 25 %
" Hart, Bliven & Mead Mfg. Co ... dis 50&10 %
Pull, " " " ... dis 50&10 %
" Brook's ... dis 50 %
" Western ... dis 25 %
Cow—Common Wrought ... dis 20&10 %
Western ... dis 20&10 %
" Sargent's ... dis 50&10&10 %
Kentucky "Star" ... dis 20&10 %
" Sargent's ... dis 50&10&10 %
Dodge's Genuine Kentucky ... dis 35 %
Yew's Genuine ... dis 30 %
Texas ... dis 35 %
Call ... dis 15 %

Bellows.
Blacksmiths' ... dis 20 %
Moulders' ... dis 15 %
Hand Bellows ... dis 10 %

Blind Adjusters.—Domestic ... ℘ doz $3—dis 20 %

Blind Fasteners.
Mackrell's ... dis 30 %
Van Sand's, No. 2000, $14·00; No. 3705, $10·75 ... net
Washburn's Patent ... ℘ gross 14 00
Merriman's ... new list net

Blind Staples.
Boardman's Patent, ⅜ in. and larger ... ℘ lb 61 c
" 5/16 in ... " 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list ... dis 30 %

Bolts.
Cast Iron Barrel, Shutter, &c ... new list dis 60, 10&10 %
Wrought Iron Barrel ... new list dis 50, 10&10 %
" " Square ... new list dis 50, 10&10 %
Wrought Iron Flush ... dis 15&10 %
Carriage and Tire, Common ... dis 75&10 %
" " " Norway Iron ... dis 50&10 %
Star, Philadelphia ... dis 50 @ 50&10 %
Eagle, Philadelphia ... dis 50 @ 50&10 %
Carriage and Tire, R. B. & W ... old list dis 50&10 %
Plow, R. B. & W ... dis 30 %
Stove, R. B. & W ... dis 20 %
" Shelton Co, Shaved Heads ... dis 20 %
Union Nut Co., old list ... dis 50&20&10 %
" " Stove ... dis 15 %
" " Machine ... dis 45&10 %

Borax ... 15c. ℘ lb

Boring Machines.
Kellogg's ... dis 15 %
Snell Mfg. Co., Rice's Patent ... dis 20 %
" " Regular ... dis 20 %
Douglas Mfg. Co ... dis 20&10 %
Morticing Machines each ... $18 00

Bow Pins.
Union Nut Co ... new list dis 50&10&5 %
Hotchkiss' ... dis 50 @ 55 %
Humason, Beckley & Co.'s ... dis 50&10&5 %
Sargent & Co.'s ... dis 50&10&10 %

Braces.
Barber's Patent ... dis 40&5 %
Q. S. Backus ... dis 40&10 %
Wilson Mfg. Co ... dis 10 %
Spofford's Patent ... dis 40&5 %
Noble's Patent ... dis 40&5 %
Bartholomew's American Ball ... dis 15&10 %
" " Patent Grip ... dis 40&5 %
Ives' Novelty ... dis 40&5 %
" Hamden ... dis 15&10 %
Common Ball ... dis 15&10 %

Brackets.—Shelf ... dis 60&10 @ 65&10 %

Bull Rings.—Union Nut Co., new list ... dis 50&10&5 %
Sargent's ... dis 60&10 %

Bung Hole Borers.
Common and Ring ... dis 25 %
Ives' Tap Borers ... dis 10&10 @ 25 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co ... dis 20&10 %
Bradley's ... dis 25 %
Beatty's ... new list dis 20 %
2 3 4 5 6 7 8 9
$19·00 $21·50 $24·00 $27·00 $30·00 $33·50 $36·50 $40·00
Hart Mfg. Co ... dis 45&10 %
0 1 2 3 4 5 6
$25·25 $29·75 $34·25 $38·75 $43·25 $48·50 $54·00

Butts.
Wrought Brass ... dis 30 %
Cast Fast Joint, Narrow ... dis 40 @ 50&5 %
" " Broad ... dis 50&10 %
Cast Loose Joint, Narrow ... dis 55&10 %
" " Broad ... dis 60&10 %
" " Mayer ... dis 50 %
" " Parliament ... dis 50 %
Drilled Wire Jointed—
Narrow, High List ... dis 50&10 %
Broad ... dis 50&10 %
Loose Joint ... dis 60&10 %
Loose Pin ... dis 50&10 %
Wrought Fast Joint, Narrow ... dis 30&10 %
Wrought Broad ... dis 35&10 %
" Loose Joint ... dis 35&10 %
Wrought Table and Back Flaps ... dis 30&10 %
Lull & Porter's Blind Butts ... dis 10 %
Palmer Blind Butts ... dis 30&10 %
Nicholson Blind Butts ... dis 40&10 %
Parker's Blind Butts ... dis 55&10 %
Huffer's Blind Butts ... dis 33⅓&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5 ... dis 55&10 %
" " " " No. 40 and 50 ... dis 50&5 %
" " " " No. 20 ... dis 60&10 %
" Mortise " " 2, 4, 4½, 6, 8, 10 ... dis 33⅓ %
Seymour's ... dis 55&10 %
Shepard's ... dis 50&5 %
Garretson's ... No. 1, dis 50&10 %; Nos. 2 and 7, dis 50&5 %
The American Spiral Spring Butt Co ... dis 30 %
Standard ... dis 50&5 %

Caps—Percussion, per 1000.
G. D ... 37 @ 40c
Ely's E. B ... 1-4s, 56c.; 1-10s, 65c., gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's ... 1-10s 70c., gold

Carpet Sweepers.
Union ... each $2 75 net
Welcome ... each 2 75 net

Cartridges.
Metallic ... dis 50&10 %

Cards.—Horse and Curry ... dis 20&10 %
Cotton ... dis 10&10 %
Wool ... dis 15&10 %

Carpet Stretchers.
P. S. & W ... per doz $2 00; dis 40&5 %
Sargent's ... per doz $2·88—dis 50&10&10 %

Casters.
Bed ... dis 30&10 %
Plate and Shallow Socket ... dis 40&10 %
Deep Socket ... dis 33⅓ %

Cattle Leaders ... new list dis 60&10 %

Chain.
English Coil ... net gold
lb ... .13 9½ 8½ 8 7¾ 7½c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2 ... by the cask, ℘ pair, gold 57c
Trace, 7-10-2 ... by the cask, ℘ pair gold, 62c
Galvanized Pump Chain ... ℘ lb 13c
German Halter Chain ... new list, Jan. 1, dis 25 %
German Coil ... new list, Jan. 1, dis 25 %
Jack Chain, Iron ... dis 50 %
" Brass ... dis 40 %

Chalk.
White ... ℘ gross, 68c net
Red ... ℘ gross, 90c net
Blue ... ℘ gross, $1·17 net
Crayons ... ℘ gross, 16½c net

Chisels.
Socket Framing, Douglass ... dis 60&10 %
" " Crossman ... dis 50&5&10 %
" " Hart Mfg. Co ... dis 60&10 %
" " Merrill ... dis 60&10 %
" Firmers, Douglass ... dis 50&10&10 %
" " Crossman ... dis 50&5&10 %
" " Hart Mfg. Co ... dis 60&5 %
" " Merrill ... dis 60 %
Socket Corner ... dis 60&10 %
Tanged Firmers ... dis 45&10 %
Butcher's ... $5·50 to £ gold
Newbould's ... $5·50 to £ gold
Spear & Jackson's ... $5·50 to £ gold

Clamps.
Cabinet ... dis 60&10 %
Judd's ... dis 45&10 %
Lambert's ... dis 20 %
Providence Tool Co ... dis 10 %

Clips, Axle.
Norway or Best ... dis 30 %
Superior ... dis 50 %
"Star," Superior Philadelphia ... dis 45&5 %

Coal Shovels.
Iron Handled ... ℘ doz, $ 95 @ 1 25
Wooden Handled ... ℘ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co ... dis 15 @ 25 %
14 15 16 17 18 inch.
Japanned ... $6·00 6·35 6·75 7·50 8·00 per doz.
Galvanized ... 9·50 10·00 10·75 11·50 12·50 "
Morning Glory Funnel Hods—
No. 15 16 17
Japanned ... $9·00 10·50 12·00 per doz
Galvanized ... 13·00 14·50 16·00 "
Sidney Shepard & Co.'s new list ... dis 10 %

Cockeyes ... 1¼ in., 34c.; 1⅜ in., 38c.; 1⅝ in., 48c. net

Cocks.
Brass Racking ... dis 20&10 %
Lock and Globe ... dis 20&10 %
Lever Bibbs ... dis 20&10 %

Coffee Mills.
Board and Box ... dis 15 %
Increase Wilson's ... new list dis 15 %
Selsor's Pat ... $9·50, $10·50—dis 25 %
French Steel ... dis 15 %
The Swift ... dis 35 %

Compasses and Dividers.
Bemis ... dis 35 %
Cook's ... dis 15 %
Excelsior ... dis 30 %
Peck Stow & Wilcox ... dis 25 %

Coopers' Tools.
Bradley's ... dis 15 @ 20 %
Chas. E. Little ... dis 20 @ 25 %
Swan & Brombacher ... dis 15 @ 20 %

Corkscrews ... dis 25 %

Corn Knives and Cutters.
Bradley's ... dis 10 %

Crow Bars.
Cast Steel ... ℘ lb 11c. net
Iron, steel points ... ℘ lb 6c

Crucibles.
Gautier & Co ... ℘ No. 5½c

Curling Irons ... ½ in., $1·80; ⅝ in., $2; ¾ in., $2·40 ... dis 10 %

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass ... dis 20&10 %
Fitch's ... dis 15&10 %
Rubber ... ℘ doz, $9·00—dis 15 %
The Lawrence Curry Comb Co ... dis 25 %

Curtain Pins.—Silvered Glass ... old list dis 52½ %

Cutlery.
American Table ... net list
American Pocket ... dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co ... dis 20&10 %

Dippers.
Britannia ... per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain ... per doz $3·25—dis 30 %
" Rimmed ... per doz 3·75—dis 20 %

Dog Collars.
Embossed Gilt ... dis 20 %
Leather ... dis 20 %
Brass ... dis 35 %

Door Springs.
Gray's ... $7·50 ℘ doz—dis 50&10 %
Torrey's Patent ... $7·50 ℘ doz—dis 55 %
Palmer's Japanned No. 6 ... ℘ doz $5·00 / " Coppered " ... " 6·00 / " Silvered " ... " 9·00 ... dis 20 %
Challenge.—
Japanned ... ℘ doz $4 00 @ 6 00—dis 40 %
Gem.—No. 1 large, Japanned ... per doz $4·00
No. 2 medium ... per doz 3·50
No. 3 small ... per doz 3·00
In Gross Lots ... dis 10 %

Drawing Knives.
Crossman's No. 1 ... dis 50&5&10 %
Douglass ... dis 60&10 %
Hart Mfg. Co., No. 1 ... dis 60 %
Merrill ... dis 60&10 %
Bradley's ... dis 25 %
Adjustable Handle ... dis 15 %

Drills.
Ingersoll's Ratchet ... dis 25 %
Moore's Triple Acting Ratchet ... dis 20 %
Whitney's Ratchet ... dis 20 %
Blacksmiths' ... each $2 60 net
Breast, P. S. & W ... dis 15&10 %
" Miller's Falls ... dis 25 %
" Aiken's ... $2·50; 4·00, dis 40 %

Drill Chucks.—The Danbury ... each 10·00, dis 25 @ 30 %

Egg Beaters.
Monroe's ... 8 in. 10 in.
Per doz $8·00 9·00 ... dis 10 %
Dover ... ℘ doz net $6·00
National ... ℘ doz $4·50—dis 20 %
Peerless ... ℘ doz $4·00—dis 10 %

Emery.
Genuine Chester—Regular Nos ... ℘ lb 7c / " Flour and FF ... ℘ lb 4c ... dis 10 %
Washington Mills—Regular Nos ... ℘ lb 8c
" Flour ... ℘ lb 5c

Enameled and Tinned Ware.
Kettles ... dis 35 %
Sauce Pans ... dis 35 %
Glue Kettles ... dis 30 %
Tinned Saucepans ... dis 25 %

Escutcheons.
Brass Thread ... dis 60&10 %
Wood ... dis 25 %

Faucets.
Cork Lined, Wood ... dis 60&10 %
Fenn's ... dis 50 %
" Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 15&10 %
Taylor's Pattern " ... dis 20&10 %
Wood and Metallic ... dis 40 %

Felloe Plates ... ℘ lb 14c; dis 10 %

Files.
American File Co ... $5 00 to £ currency—dis 10 %
Nicholson ... $5 00 to £ currency—dis 12½ %
" Tapers ... dis 12½&5 %
Hartford File Co ... $5 50 to £ currency—dis 10 %
Newbould's ... 5 25 to £ gold
Rothery's ... $5 to £ currency
J. & Riley Carr ... 5 25 to £ gold
" Horse Rasps ... 5 50 to £ gold
Stubs' ... 8 50 @ 9 00 to £ gold
Butcher's ... 5 25 to £ gold
Walter Spencer & Co.'s "Diamond" ... 5 25 to £ gold
Spear & Jackson's ... 5 00 to £ gold
Jowitt's ... 5 25 to £ gold
"Western" ... 5 00 to £ net
W. K. & C. Peace's "Imperial" ... 5 25 to £ gold
R. Ibbotson ... 5 00 to £ gold
Fisher's ... 4 75 to £ gold
Goodlad's ... 4 00 to £ gold
Moss & Gamble ... 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" Horse Rasps ... 5 25 to £ gold
"Philo Sheffield," P. T. Co ... 5 00 to £ gold

Fluting Machines.
Mrs. Coles, 7 inch rolls ... 6 50
" " 5 " ... 5 50
Knox, with 4-inch Rolls ... 4 00 each net
" " 6 " " ... 5 25 each net
O. K ... 6 50 each net
Peerless, 4-inch Rolls ... 4 00 each net
" 5 " " ... 4 75 each net
Excelsior, No. 1 ... 4 75 each net
" No. 2 ... 6 50 each net
Diamond ... 7 50 each net
Climax 7-inch Rolls ... 8 00 each net
" 4½ " ... 6 50 each net
Empire ... 4 00 each net
Eureka, No. 1, 7-inch Roll ... 8 00 each net
" No. 2, 5-inch Roll ... 6 00 each net
K. F. M., 4½-inch Roll ... 5 50 each dis 15 %
" 6-inch Roll ... 6 00 each dis 15 %
Myers Fashion Fluter, 4½ inch Rolls ... 3 00 each net
" Convex Brass Fluter, Sad Iron attachment ... $1·75
Domestic Fluter ... $1·75 each net
Fairy, Self-Heater ... 8 00 each net
Geneva Hand Fluter ... $15 00 per doz net
Champion, 6 inch rolls ... $6 00 each dis 10 %
" 4 inch rolls ... $5 00 each dis 10 %

Fluting Scissors ... dis 25&10 %

Forges.
"Empire" (W. P. Kellogg & Co.) ... dis 30 %

Forks.
Hay, Manure & Spading ... dis 30 %
Plated A 1 ... dis 40, 10&5 %

Fry Pans.
Burnished, P. S. & W ... dis 30 %
℘ doz ... $2·80 3·00 3·38 3·75 4·12 4·50 5·00 5·62 6·75
No ... 0 1 2 3 4 5 6 7 8
Smith, Burns & Co., "Excelsior" Polished ... dis 25 %
℘ doz ... $3·70 4·00 4·70 5·30 6·00 7·00 8·00 9·00
No ... 1 2 3 5 6 7 8

Gas Stoves.
Tiff & Howard ... dis 20 %

Gauges.
Marking ... dis 45&10 %
Wire ... dis 10 %

Gimlets.—Metal and Wood Head ... dis 25&10 %

Grind Stones.—J. F. Green & Bro ... dis 20 %

Grind Stone Fixtures
Sargent's Patent ... dis 65&10 %
Reading Hardware Co ... dis 66⅔&7½ %
Hart Mfg. Co.'s ... dis 60&5&10 %

Hammers.
Emmet Hammer Co.'s Handled ... dis 25 %
" Sledge & Stone ... ℘ lb 25 @ 30c net
Humason & Beckley Mfg. Co ... dis 16⅔&10 %
Maydole's, new list ... dis 5 %
Cheney's ... new list net
Verree ... dis 5 %
Yerks & Plumb ... dis 12½ %
Magnetic Tack ... dis 20&10 %
Warner's ... list net

Hand Cuffs and Leg Irons.
Tower's ... dis 25 %
Providence Tool Co.'s Hand Cuffs ... $15 per doz / " " Leg Irons ... 25 " ... dis 10 %

Handles.
Wrought Chest ... dis 60&10 %
Surface Chest ... dis 65&10&10 %
Flush Chest ... dis 60&10&10 %
Lifting ... dis 60&10 %
Coffin ... dis 50&10 @ 60&10 %
Saw and Plane ... dis 20&10 %
Hammer and Hatchet ... dis 10 %
Greensboro', Axe, Pick, Hammer, &c ... dis 10 %
Woolworth Axe, Pick and Sledge ... dis 10 %
Brad Awl ... per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td ... " 5 25—dis 10&10 %
" " " large ... " 6 25—dis 10&10 %
Apple " " ass'td ... " 6 00—dis 10&10 %
" " " large ... " 7 00—dis 10&10 %
Socket " " ass'td ... " 3 50—dis 10&10 %
" Framing " " ... " 6 00—dis 10&10 %
File ... " 3 50—dis 10&10 %
Auger ... " 5 50—dis 10&10 %
" large ... " 6 50—dis 10&10 %

Hangers.
Barn Door ... dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.) ... dis 30 %
Novelty ... dis 30 %

Harness Snaps.
Henshaw's ... dis 25&10 %
Judd's ... dis 40 %
Fitch's (Bristol) ... dis 30 %
Hotchkiss' ... dis 10 %
Andrews' ... dis 25 %
Sargent's ... dis 50&10 %
New York Wire ... dis 20&20 %

Hatchets.—Isaiah Blood ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 50 8 00 8 50
Claw, " 1 2 3 ... ℘ doz 8 50 9 00 9 50
Lathing, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Hunt's ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ℘ doz 7 50 8 25 9 00
Hurd's ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $6 50 7 00 7 50
Claw, " 1 2 3 ... ℘ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ... ℘ doz 6 50 7 00 7 50
Yerkes & Plumb ... dis 12½ %
Shingling, Nos. 1 2 3 ... ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ℘ doz 7 00 7 50 8 00
Simmon's ... dis 15 %
Shingling, Nos. 0 1 2 3 ... ℘ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Broad, " 1 2 3 ... ℘ doz 9 00 10 00 12 00
" " 4 5 6 ... ℘ doz 14 00 16 00 18 00
" " 7 8 ... ℘ doz 20 00 22 00
Elephant ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
J. P. Verree & Co ... dis 5 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ℘ doz 7 00 7 50 8 00
Underhill's ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz 7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ℘ doz 12 00 11 00 13 00

Hinges.
Gate, Western ... ℘ doz $6·25—dis 60&10 %
" N. E ... ℘ doz 11·25—dis 60&10 %
" N. Y. State ... ℘ doz 7·20—dis 60&10 %
Rolled Plate ... dis 65&10 %
" Raised ... dis 65&10 %
Wrought Strap and T ... dis 35&10 %
Providence Plate. {6 and 8 in. 11c ℘ lb; over 8 in. 9½c ℘ lb} ... dis 25 @ 30 %
Screw Hook and Strap {8, 10, 12 in. 7c; 14 to 36 in. 6c} ... net
Heavy Welded Hook {8 to 12 in. 6¾c; 14 in. & up, 6c} ... net
Screw Hook and Eye {⅝ to 1 in., 6¾c; ⅜ in. 7½c; ¼ in. 9c} ... net

Hoes.
Solid Shank, C. S ... ℘ doz $8 00—dis 30 %
Socket ... ℘ doz 9 00—dis 30 %
Riveted Eye ... ℘ doz 5 00—dis 30 %
Grub ... dis 25 %
Planters'—Winsted ... add 10 %
Scovill ... add 33⅓ %
Scovill Pattern (Winsted) ... add 20 %
Lane's C. S. Cresent, American Pattern ... add 5 %
" " " Scovil Pattern ... add 15 %

Hooks.
Harness ... dis 60 10&5 %
Bird Cage ... dis 70&10 %
Cotton ... dis 50 %
Belt ... dis 50&10 %
Clothes Line ... dis 60&10&10 %
Bench—Skinner's ... per doz $8 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ℘ doz ... dis 10 %
Bench—Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" —McGill's ... $3 00 per doz, dis 10 %
Wardrobe, Japanned ... new list dis 60, 10&5 %
Hat and Coat " ... new list dis 60, 10&5 %
Wrought Staples and Hooks and Staples ... dis 70&10 %
Screw Hooks and Eyes ... dis 70, 10&10 %
Grass ... dis 25 %
Whiffletree—Patent ... dis 30 %
Hooks and Eyes—Malleable Iron ... dis 60&10&10 %
" Brass ... dis 60&10&10 %

Horse Nails.
Putnam's.
No ... 5 6 7 8 9 10
32c 28c 26c 25c 24c 23c
In lots 2000 lbs. dis. 5 %.
Ausable Horse Nail Co.
No ... 5 6 7 8 9 10
Ausable ... 30c 27c 25c 24c 23c 22c
Pointed and Polished ... 31c 28c 26c 25c 24c 23c
Pointed and Blued ... 32c 29c 27c 26c 25c 24c
In lots of 1000 lbs., 5% discount.
Brundage.
No ... 5 6 7 8 9 10
29c 26c 24c 23c 22c 21c
In lots of 500 lbs., dis. 5 %.
American Pressed.
No ... 5 6 7 8 10
22c 20c 20c 20c 20c 20c
In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).
No ... 5 6 7 8 9
31c 28c 26c 25c 24c
In lots of 1000 lbs. dis 5 %.
Buffalo Forged.
No ... 6 7 8 9 10
28c 26c 25c 24c 23c
Globe (Pointed and Polished).
No ... 5 6 7 8 9 10
31c 28c 26c 25c 24c 23c
In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).
No ... 5 6 7 8 9 10
Patent Finish ... 28 25 23 22 21 20
Extra " ... 30 27 25 24 23 22
In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).
No ... 5 6 7 8 9 10
28c 30c 29c 27c 26c 25c
In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.
No ... 6 7 8 9 10
Great Western ... 27c 25c 24c 23c 22c
U B ... 29c 27c 26c 25c 24c
In lots of 1000 lbs., dis 5 %.
Star Brand ... ℘ lb 16c
Morgan ... 14c

Horse Shoes.
Burden ... ℘ keg, $5 85
R. I. Horse Shoe Co., Perkins Pattern ... ℘ keg, 5 85
" " R. I. Pattern ... ℘ keg, 6 85
Mule Shoes ... ℘ keg, 6 85

Kettles.
Brass ... ℘ lb 55c net
In lots of 500 lbs ... ℘ lb 50c net

Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe " ... dis 15 %
" Bread " ... ℘ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's" ... dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives ... dis 25 %

Knobs.
Carriage ... dis 60&10 %
Base—Common ... net
" Plush Tip ... dis 10 %
" Elastic End, No. 8 ... dis 30&10 %
Door, Mineral ... ℘ doz $2·00 / " Por. Jap'd ... ℘ doz 2·75 / " " Plated ... ℘ doz 6·50 @ 9·00 / " " Por ... ℘ doz 6·50 @ 9·00 ... dis 45&5&2 %

Ladles.
Melting ... dis 20 %

Lanterns.
Peerless ... No. 5, per doz $11·75—dis 10&10 %
Brady's Patent ... dis 10 & 10 %
Ætna ... dis 10 & 10 %
Yankee ... dis 10 & 10 %
De Beque ... dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch ... each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined ... per doz $7 00, dis 10 %

Lines.
Linen Fish ... dis 10&10 %
Cotton Chalk ... dis 40 %
Silver Lake Chalk ... dis 10&10 %
Mason's ... dis 10&10 %
Galvanized Wire Clothes ... $1 per 100 ft. dis 33⅓ %

Locks and Latches.
Cabinet—Gaylord ... dis 25 %
" Eagle ... dis 25 %
Trunk " ... new list dis 25 %
Langstroth & Crane, Round Key ... dis 40 %
" " Flat Key ... dis 33⅓ %
Barnes & Deitz ... dis 25 %
Continental ... dis 15 %
Shepardson's ... dis 20 %
American Lock Co ... dis 33⅓ %
Plate ... dis 25 %
Yale Lock Co ... dis 40 %
Sargent & Greenleaf ... dis 20 %
Trenton / Branford / Norwich / Russell & Erwin / Norwalk / Nashua / Mallory, Wheeler & Co / P. & F. Corbin / Parker & Whipple / Jacobus & Nimick Mfg. Co ... dis 45&5 %. 2 % extra for cash.
Padlocks, Russell & Erwin / " Mallory, Wheeler & Co / " Wm. Wilcox & Co ... dis 50&5&2 %
" Romer's ... dis 15 %
" Vulcan Hardware Co ... dis 20 %
" New York Lock Co ... dis 20 %
" J. H. McWilliams ... dis 5 %
" Scandinavian Jail ... dis 10 %
" Barnes & Deitz ... dis 25 %

Mallets.
Hickory and Lignumvitæ ... dis 20 %

Meat Cutters.
Dixon's (P. S. & W.) ... dis 10 %
No ... 1 2 3 4
℘ doz ... $14 00 $17 00 $19 00 $30 00
Hales' ... dis 25 %
No ... 11 12 13
℘ doz ... $27 00 $33 00 $42 00
Miles Challenge ... dis 30 %
No ... 1 2 3
℘ doz ... $27·00 $30·00 $40 00
Perry's Champion (P. S. & W.) ... dis 10 %
No ... 200 300 400
℘ doz ... $22 00 $27 00 $40 00
Woodruff's (P. S. & W.) ... dis 10 %
No ... 100 150
℘ doz ... $15 00 $19 00
American ... dis 25 @ 25&5 %
No ... 1 2 2½ 3 4 B 5
Each ... $6·00 $9·00 $12·00 $15·00 $30·00 $60·00 $75·00
Draw Cut ... dis 20 %
No ... 5 6 8
Each ... $56·00 $90·00 $250·00

Molasses Gates.
Stebbins' ... dis 65&10 %
" Tinned ends ... dis 40&10 %
Bush's ... dis 20 %
Lincoln's ... dis 50 %
Weed's ... dis 15 %

Mortars and Pestles.
Iron ... net

Nails ... See Trade Report

Nail Pullers.
Capewell's Giant ... per doz $30 00 net

Nuts and Washers.
Nuts ... large, 6c; small, 8c off list.
Washers ... large, 8c; small, 10c off list.

Oil Stones.
Washita No. 1 ... ℘ lb 22c
Washita Slips ... ℘ lb 45c
Washita No. 2 ... ℘ lb 17c
Arkansas ... ℘ lb 1 25—dis 12½ %
" Slips ... ℘ lb $2 00—dis 12½ %
Hindostan ... ℘ lb 6c dis 10&10 %
" Slips ... ℘ lb 10c dis 10&10 %
Sand Stone ... 6c—dis 10&10 %

Oilers.
Miller's Zinc ... dis 40 %
" Brass and Copper ... dis 30 %
Sheet Metal Screw, Zinc ... dis 37½ %
" " " Brass ... dis 33⅓ %
Olmsted's ... new list dis 25&10 %
Broughton's ... dis 25&5 %
Malleable ... per doz $5 00 dis 10 %
Prior's Patent or "Paragon" ... dis 30&10 %

Ox Shoes.
Concave ... ℘ lb 13c net

Ox Balls ... dis 60&10 %

Pencils.
Faber's Carpenters' ... net
" Round Gilt ... ℘ gross $6 00 net
Dixon's Lead ... ℘ gross $4·50 net
" Lumber ... ℘ gross 9·00 net

Picture Nails and Knobs.
Brass Head ... dis 60&10 %
Porcelain Head ... dis 55&10 %
Richards' Patent ... dis 40 @ 40&10 %
Judd's ... dis 60&10 %

Pinking Irons ... per doz $2 75—dis 65 %

Planes.
Auburn Tool Co.'s ... dis 30&10 %
Ensenore, Bench ... dis 50 %
Chapin's, 1st quality ... dis 20&10&10 %
" 2d quality ... dis 45&10 %
Greenfield Tool Co ... dis 25&10 %
"New York" ... dis 40 %
Sandusky Tool Co., 1st quality ... dis 35 %
" " 2d " (Ogontz) ... dis 50 %
Ohio Tool Co., 1st quality ... dis 35 %
" " 2d quality (Sciota) ... dis 50 %
Owasco Tool Co., 1st quality ... dis 35&10 %
" " 2d quality ... dis 50 %
Howland's, 1st quality ... dis 30&10 %
" 2d quality (Cayuga) ... dis 40&10 %
Bailey's Patent Adjustable ... dis 20&10 %
Plane Irons, Butcher's ... $5 50 to £ gold—new list
" Auburn Tool Co.'s ... dis 25 %
" Chapin's ... dis 10&10 %
" Greenfield Tool Co ... net list
" Middletown Tool Co ... dis 10 %
" Ohio Tool Co ... dis 10 %
" Spear & Jackson's ... 5 50 to £ gold—new list
" Sandusky Tool Co ... dis 10 %
" Bailey's ... dis 20&10 %
Plow Bits, Greenfield Tool Co ... dis 10 %

Pliers.
Button's Patent ... dis 33⅓ %

Plumbs and Levels
Chapin's ... dis 66⅔&10 %
Standard Rule Co.'s New Adjustable ... dis 60&10 %
Standard Rule Co.'s Non-adjustable ... dis 60&10&10 %
Stanley R. & L. Co.'s Pat. Adjustable ... dis 60&10 %
" " " Non-Adjustable ... dis 60&10&10 %
Pocket Levels ... dis 50&10 %
Johnson's Patent Adjustable ... dis 60&10 %

Pulleys.
Hot House and Tackle ... dis 60&10 %
Jap'd Screw ... dis 60&10 %
Brass Screw ... dis 60&10 %
Jap'd Side ... dis 60&10 %
" Clothes Line ... dis 60&10 %
Hay Fork ... per doz $4 50 @ 5 00, dis 10 %

Pumps.
Douglas Cistern, etc ... new list dis 25 %
" S. & F ... new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher ... dis 25 %
" " " Rams ... dis 20 %
" " " Garden Engines ... dis 10 %
Cucumber (Burlingham & Purdy)—
6 ft. No 3, with 12 ft. pipe ... $4·00 net
6 ft. No. 1, with 12 ft. pipe ... 4·50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe, 8c. per ft.; Coupling, 20c. per ft.

Punches.
Belt or Drive ... per doz $1·50 net
Spring ... per doz $7·00—dis 30&10 %

Rail.
Sliding Door, Wrought Brass ... ℘ lb 44c, dis 10 %
" " Iron, Painted ... ℘ foot 9c—dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch ... dis 60&10&10 %
" " for N. E. Hangers ... dis 60&10&10 %

Rakes.
Cast Steel ... dis 30 %
$8 00 9 00 10 00 11 00
8 10 12 14 teeth.
Malleable ... dis 30 %
$5 00 5 50 6 00 6 50
9 11 13 15 teeth.

Razor Straps.
Evan's ... dis 25&10 %
Genuine Emerson (B. F. Badger or C. Emerson) ... dis 25 %
Imitation Emerson ... ℘ doz $3·75—dis 35 %
Hunt's ... dis 40 %
Chapman ... dis 10 @ 15 %
Torrey's ... dis 10&10 %
Saunder's ... net @ 10 %

Rivets.—Old Colony.
Iron and Tinned ... dis 25&7½ %
In bulk ... dis 7½ %
Copper Rivets and Burrs (No. 8, 50c) ... dis 25 %

Rivet Sets ... net

Rods.
Stair ... new list dis 33⅓ %
" American Patent ... dis 33⅓ %

Rollers.
Barn Door ... revised list dis 60, 10&10 %
Novelty ... dis 10 %

Rope. Manufacturers' List.
Manila ... ⅝ inch and larger ℘ lb 15 c
" ... ½ inch ℘ lb 15½c
" ... ¼ and 5-16 inch ℘ lb 16 c
" Lath Yarn, Fine Tar'd ... ℘ lb 16 c
" Hay Rope ... ℘ lb 15½c
Sisal ... ⅝ inch and larger ℘ lb 11½c
" ... ½ inch ℘ lb 12 c
" ... ¼ and 5-16 inch ℘ lb 12½c
" Hay Rope ... ℘ lb 12 c

Rules.
Chapin's Boxwood ... dis 66⅔&10 %
" Ivory ... dis 50&10 %
Hubbard & Curtiss Mfg. Co ... dis 60&20 %
Stanley Rule and Level Co.'s Ivory ... dis 50&10 %
" " " Boxwood ... dis 60, 10&10 %
Standard Rule Co.'s Boxwood ... dis 70 %
" " " Ivory ... dis 50&10 %

Sad Irons.
From 4 to 10 lbs ... ℘ lb 3¾ @ 4c net
Sad Iron, Nickel Stand attached ... ℘ lb 9c
Self-Heating ... per doz $10 00 net
" " Tailors' ... per doz 22 25 net

Sand Paper.
Beader & Adamson's (Flint) 00 to 1½ ... $4 25 ℘ ream
" " 2, 2½ & 3 ... 4 75 "
" " Assorted ... 4 25 " ... dis 15 %
" " Star ... ℘ ream $3 25
" " Emery ... ℘ ream $6 50 @ 11 50
H. B. & M. Roman Flint ... dis 15 %

Sash Cord.
Common ... ℘ lb 20 @ 22c. net
Silver Lake, Russia Flax ... ℘ lb 55c. net
" " White Cotton ... ℘ lb 67c. net
" " Drab Cotton ... ℘ lb 69c. net

Sash Locks.
Clark's, Nos. 1 and 2 ... dis 33⅓ %
Ferguson's ... dis 33⅓ %
Norwich ... dis 15 %
Walker's ... list net

Sash Weights.
Solid Eyes ... ℘ lb 2½c

Sausage Stuffers or Fillers.
Miles ... ℘ doz $30—dis 10 %
Stow or Perry ... ℘ doz No. 1, $15; No. 0, $21—dis 15 %
Draw Cut No. 4 ... each $30 00—dis 20 %

Saw Frames ... per gross $18 00—dis 10&10 %

Saw Rods ... $10 list, dis 10&10 %

Saws.
Spear & Jackson's oldpattern ... $4 50 to £ gold
Spear & Jackson's American Pattern ... $3·55 to £ gold
John Spear ... $3 60 to £ gold
Am. Saw Co ... new list
Perforated Cross Cuts, all kinds ... 68c ℘ foot
Inserted Tooth ... dis 10 %
All else ... dis 12½ %
Disston's Circular ... dis 20 %
" Mill ... dis 25 %
" Cross Cut ... dis 15 %
" other kinds ... dis 12½ %
Livingston's Framed Wood ... dis 10 %
Livingston's Butcher and Kitchen ... dis 10 %
H. W. Peace's Circulars ... dis 10 %
" Other kinds ... dis 10 %
Wm. McNiece's hand, Cross Cut and Circular ... new list dis 15 %
Wm. McNeice's Patent Pole Pruning Saw ... dis 10 %
" " " Compass Saw ... net.
E. M. Boynton's Lightning ... dis 40 % for immediate cash
" Others ... dis 15 %
Wheeler & Clemson Mfg. Co.'s Hand ... dis 15 %
" " " Cross-Cut ... dis 30 %

Saw Sets.
Stillman's Genuine ... ℘ doz $8·00—dis 10 %
" Imitation ... ℘ doz 3·25—dis 10&10 %
Aiken's Pattern ... ℘ doz 7·00—dis 25&10 %
" Genuine ... ℘ doz $15·00—dis 25 %
" " 6 dozen lots ... dis 25&10 %
Hart's Patent ... dis 15 %
Nash's ... dis 20&10 %
Bemis' ... dis 10 %
Hotchkiss' ... ℘ doz 5·50—dis 10 %
Common Lever ... per doz $2 00—dis 10&10 %
Leach's ... dis 15 %

Scales.
Hatch, Counter ... ℘ doz $36—dis 25 %
" Tea ... ℘ doz $15—dis 25 %
Turnbull's ... dis 20 %
Brown's ... dis 25&5 %
Fairbanks' ... new list dis 15 @ 20 %
Howe's ... dis 15&5 %
Shattuck's Counter and Union ... dis 15 %
Chatillon's Grocers' ... dis 25 %
Eureka ... dis 25 %
Universal Family ... dis 30 %
Scale Beams.
No. 1 300 to 1200 lbs ... 90c ℘ cwt / No. 2 " " ... 75c ℘ cwt ... dis 35&10 %

Scrapers.
Box, 1 Handle ... per doz $6·25, dis 10 %
" 2 " ... per doz 7·50, dis 10 %
Foot ... dis 60 & 10 %
Ship (common) ... per doz $3 00 net
Ship—Providence Tool Co ... dis 10 %

Screws.
American list of Jan. 1, 1874.
Flat Head Iron ... dis 52½ %
Round Head Iron ... dis 50 %
Flat Head Brass ... dis 52½ %
Round Head Brass ... dis 50 %
Round Head Silver Capped ... dis 35 %
Hand Rail ... dis 55&10 %
Coach or Lag ... dis 30&10 @ 40 %
Coach, Patent Gimlet Point ... dis 10 %
Bed ... list net
Japanned (List of Flat Head Iron) ... dis 40 %
English—Nettlefold & Chamberlain's Flat Head Iron ... dis 52½&10 %
Machine—Flat Head, Iron ... dis 60 %
" " Brass ... dis 10 %
Round Head, Iron ... dis 55 %
" " Brass ... net
Birmingham Screw Co. (A. Field & Co.), Flat Head Iron ... dis 52½&10 %
Bench—Iron ... dis 60, 10&10 %
" —Wood, Beach ... ℘ doz $3·00 net
" " Hickory ... dis 20&10 %
Hand ... dis 25&10 %
Jack—Bell Bottom ... dis 15 %

Scythes.
Blood's German Steel, Grass ... ℘ doz $9 00
" Cast " " ... ℘ doz 10 00
" Silver " " ... ℘ doz 11 00
" German " Grain ... ℘ doz 13 00
" Cast " " ... ℘ doz 14 00
" Red Rover ... 12 00
" Young America ... 9 50
" Silver Clipper ... 12 63
Scythe Snaths ... dis 20 %

Sieves.—Mann's Patent ... dis 25 %

Shears.
Cast Steel ... dis 70&10 %
Cast Iron ... dis 25&10 %
Seymour's ... dis 60&10 %

Sheaves.
Sliding Door ... dis 45&5&2 %
" Patent Roller ... dis 25 %
" " Hatfield's ... dis 50 %
" Russell's Anti-Friction ... dis 50 %

Shovels and Spades.
Ames ... dis 12½ %
Birmingham Shovel Co ... dis 12½ %
Rowland's ... dis 25 %
Old Colony ... new list dis 10&5 %
Middleboro' Shovel Co ... new list dis 12½ %
Dunning's Shovels and Scoops ... dis 20&7½ %
Snow Shovels ... ℘ doz $7 00 @ 8 00 net

Shovels and Tongs.
Iron Head ... new list / Brass Head ... new list / Polished Steel ... new list ... dis 50 %

Skates.
Barney & Berry's
N. Y. Club ... ℘ pair $2·75 / B. & B. Club ... " 3·50 / All Clamp ... " 4·25 / Rink ... " 8·00 ... dis 25 %
Florence Club ... per pair $3·50—dis 25 %
" Steel ... per doz $9 net
Peck & Snyder's—
American Club, Polished ... ℘ pair $5·00
" " Blued Top ... ℘ pair $3·75 net

Slates.
Square Frames, Round Cornered, by case ... dis 65&10 %
Less than a case ... dis 65 %
Oval Frames, by case ... dis 40 @ 40&10 %
Less than a case ... dis 30 %

Spoke Shaves.
Iron ... dis 33⅓&10 %
Wood ... dis 30 %
Bailey's ... dis 10&10 %

Spoons.
Iron ... new advanced list, dis 10 %
By the case ... dis 20 %
Britannia ... dis 45&10 %
Rogers & Bro., A 1 ... dis 40, 10&5 %, cash
Derby Silver Co ... dis 50 & 5 %
Holmes, Booth & Haydens ... dis 50&10 %
Nickel Silver Co ... dis 40&10 %
German Silver ... revised list dis 30&5 %
Tinned (P. S. & W.)—
Teas ... $1·30 ℘ gross, net
Tables ... 2·75 " net

Stocks and Dies ... dis 15 %

Stove Polish.
Gem ... ℘ gross $5 00, dis 10 %
Joseph Dixon's ... ℘ gross, 6 00
Gold Medal ... ℘ gross $6 00 dis 15 %

Squares.
Steel ... dis 50 %; full cases, dis 50&10 %
Iron ... dis 50 %; full cases, dis 50&10 %
Nickel Plated ... add $2 50 @ $4 00 ℘ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 30 %

Tacks.
Full Weight American Iron ... dis 45&7½ %
Half Weight American Iron ... dis 72½&7½ %
Carpet, new list ... dis 7½ %
Brads American Half Weight ... dis 50&7½ %
Finishing Nails ... ½ ⅝ ¾ 1 1¼ in. and over
℘ lb ... 25c 20c 18c 14c 13c dis 7½ %
Trunk and Clout ... ½ ⅝ ¾ 1 1¼ in. and over
℘ lb ... 25c 20c 18c 14c 12c dis 7½ %
Copper Tacks ... ℘ lb 50c—dis 7½ %
Iron Shoe Nails, ℘ lb 4-8 and longer, 9½c; 3½-8, 10c ... dis 7½ %
Double Pointed ... dis 33⅓&10 %

Tapes, Measuring.
American Flask and Cap Co ... dis 20 %
Eddy's ... dis 20 %

Thermometers.
Tin Case ... dis 50&10 %

Toe Calks.
... ℘ lb 13c net

Tobacco Cutters.
Champion ... dis 20 %
Morse's ... ℘ doz $12·00—dis 10&10 %
Wood Bottom ... per doz $12—dis 20&10 %
All Iron ... per doz $19·50—dis 20&10 %

Tinners' Tools and Machines.
P. S. & W ... list net

Traps.
Newhouse ... dis 20 %
Peck, Stow & Wilcox ... dis 30 %
Blake's Patent ... new list dis 25 %
Mouse, Wood Choker ... ℘ doz holes, 15 @ 16c
" Round, Wire ... ℘ doz $1 80 to 2 00 net
" Square, " ... ℘ doz 2 00 to 2 50 net
" Cage, " ... ℘ doz 2 50, dis 10 %

Trowels.
Lothrop's Brick and Plastering ... dis 15 %
Disston's Plastering ... dis 12½ %
Disston's Brick ... dis 12½ %
Rose's Brick ... dis 5 %
Brades' Brick ... gold. dis 10 %
Worrall's Brick and Plastering ... dis 20 %
Garden ... dis 25 %

Triers.
Butter and Cheese ... dis 25 %
Ventilators.
Nickel and Gilt ... per dozen $16·00 @ 18·00
Vises.
Trenton Vises, Solid Box.
 30 to 160 lbs ... 16c
 160 and over ... 15c
Peter Wright's ... ₩ ℔ 15½c. gold
Wilson's Solid Box ... dis 15 %
 39 to 160 lbs ... 18c
 160 and upward ... 22c
Wilson's Parallel ... dis 30 %
Sargent's " ... dis 50&10&10 %
Backus & Union, Parallel ... dis 25 %
Buffalo, Parallel ... new list dis 25 %
Fisher & Norris' Double Screw Parallel ... dis 15&10 %
Trenton Parallel ... dis 15 %
Merrill's Parallel ... dis 15 %
Parker's ... dis 20 %
Stephens' Parallel ... dis 15 @ 20 %
Bonney's Saw Filers ... per doz $20—dis 25 %
Stearn's Saw Filers ... per doz $20—dis 25 %
Wheel Barrows.
Canal (Pugsley & Chapman) ... new list dis 10 %
Coal, Garden and Stone (Pugsley & Chapman) ... dis 25 %
Wheel Heads.
Brass Bushed ... per doz $3 50 net
Well Wheels.
Revised list ... dis 60&10 %
Wire.
Brass and Copper ... dis 10 %
Bright and Annealed ... Nos. 0 @ 18 dis 40 @ 45 %
 " " ... " 19 @ 26 dis 50 @ 55 %
 " " ... " 27 @ 36 dis 55 @ 60 %
Coppered ... " 0 @ 18 dis 35 @ 40 %
Galvanized, Nos. 0 to 6 ... market list net @ dis 5 %
Galvanized, Nos. 7 to 18 ... market list dis 10 @ 15 %
Tinned ... dis 25 @ 30 %
Cast Steel ... 15 @ 20 %
Tinned Broom Wire ... dis 30 @ 35 %
Galvanized Telegraph, Nos. 8 and 9 ... ₩ ℔ 9c @ 10c
Galvanized Telegraph, Nos. 10 and 11 ... ₩ ℔ 10½c @ 11½c
 " " " 12 ... ₩ ℔ 10½c @ 11½c
Annealed Fence, Nos. 8 and 9 ... dis 40 @ 45 %
 " Grape, " 10 to 14 ... dis 40 @ 45 %
Fence Staples ... ₩ ℔ 8 @ 8½ %
Stubs' Steel Wire ... $7 00 to £ gold
Judd's Picture Wire ... dis 50
Wrenches.
American Adjustable ... dis 45 %
Baxter's Adjustable "S" ... dis 20 %
 " Diagonal ... dis 20 %
Collins & Co.'s ... dis 45 %
Coes' Genuine ... dis 40&5 %
 " Pattern (Wrought) ... dis 50&10 %
 " " (Malleable) ... dis 60&10 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 70 %
Davis' Patent Duplex ... new list dis 25 %
Bemis & Call's Patent Combination ... dis 20&5 %
Wringers.
Providence ... ₩ doz $60 00
Reliance ... ₩ doz 57 00
Universal—Extra ... ₩ doz 60 00
Novelty ... ₩ doz 60 00
Sherman ... ₩ doz 57 00
Monitor ... ₩ doz 57 00
King ... ℔ doz 60 00
Crown ... ℔ doz 60 00
Eureka ... ₩ doz 60 00
Independent ... ₩ doz 57 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 10 %.
COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½	1	2	3	4
Inch	4½	5 3-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts		6	8	10	12
Inch		8¾	9½	9¾	10 9-16
Per gross		$7·00	8·00	8·50	11·50

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11¼	12¼	13¼
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11¼	11¾	12¼	12¾	13¼
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	·50	6·00	6·50	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·50	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3½	3¾	4½	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2¾	3	3½	4	4½ inches.	
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7½	8	8½	9	9½	10	10½	11	11½
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.

Sheet	¼	½	1
Per gross	$3·00	6·00	11·50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes ... per gross,	$8·00	11·50
With Tubes ... "	10·50	14·00

Stamped Square Pans.

No.	½	
Per gross	$7·50	14·50

Common Square Pans (One Sheet).
Per gross ... $12·50
Milk Skimmers (Plain or Pierced).
Per gross ... $4·00
Lettered Plates.

Inch	5½	6
Per gross	$3·25	4·00

Steamer Bottoms.
Add $1 per gross, or 10c. per doz. to list of Pot Covers.
Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain ... per gro.	$4·50	5·00	5·50	6·00	6·50	7·50
Jap'd or Burn'd ... "	6·00	6·50	7·00	8·00	8·50	10·00

Coffee Boiler Lips.

	Small.	Large.
To Rivet ... per gross,	$0·80	1·10
To Solder ... "	1·25	

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	2 quarts.	2½ quarts.
Per doz	·90	1·15	1·50	1·85	2·50

RETINNNED WARE, dis 25 %.

Retinned Milk Pans.

Qts.	½	1	1½	2	3	3½	4	5	6	8	10	12
₩ doz.	1·20	1·50	1·75	2·00	2·25	2·75	3·15	3·50	3·85	4·75	5·25	5·75

Dipper Bowls, Plain Stamped ... dis 20 @ 25 %
Pints ... ½ 1 Quarts ... 1 2 2½
Per doz. ·50 ·75 Per doz ... 1·00 1·25 1·75
Dipper Bowls, Retinned ... dis 20 @ 25 %
Pints ... ½ ¾ 1 Quarts ... 1 2 2½
Per doz. ·75 ·95 1·05 Per doz ... 1·40 1·75 2·25
Pans.
Dish Pans, Tinned ... dis 20 @ 25 %

Quarts	7	8	10	14	17	21	30
Per doz.	8·50	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE.

Cannisters, Common ... dis 10 %
Pound ... ½ 1 2 3
Per doz ... $1·10 1·60 2·50 3·25
Canisters, Hinged ... dis 10 %
Pound ... 1 2
Per doz ... $1·75 2·75 3·40 3·75 4·50
Candlesticks, Japanned ... dis 10 %
No ... 1 2
Per gross ... $6·00 7·00
Cake Boxes, Round ... per nest, $3·25, dis 10 %
 " Square ... per nest, 4·25, dis 10 %
Chamber Pails, Japanned (Smith, Burns & Co.) ... dis 10 %
Nos ... 2 3 4 5
Green, per doz ... $8·00 9·00 10·50 12·50
Oak " ... $9·50 10·50 12·00 13·50
Dust Pans, Corrugated ... per gross, $22·00, dis 10 %
Box Graters ... per gross, $4·00, dis 10 %
Molasses Cups ... dis 10 %
Pint ... ½ 1 2
Per doz ... $1·25 ·50 2·75
Lunch Boxes, per doz ... 7 in. $2·00; 8 in. $2 50; dis 10 %
Pepper Boxes Japanned ... dis 10 %
Per gross ... Small, $3·00; Large, $4·00
Toy Banks, House ... dis 0 %
Tea Trays, American Tea Tray Co ... dis 15 %
No ... 1 2
Per gross ... $7·00 5·50
Toy Banks Gothic ... dis 10 %
No ... 1
Per gross ... $5·50
Toy Cups, Straight ... dis 10 %
No ... 1 2 3
Per gross ... $4·00 3·50 3·50
Toy Cups, Flaring ... No. 1, $4·25; 2, $3·70 ₩ gross, dis 10 %
Toy Pails, Covered ... dis 10 %
No ... 1
Per gross ... $4·50
Toy Rattles ... per gross, $2·25, dis 10 %
Trunks, Wire Handled ... per nest (5) $1·50, dis 10 %
Spittoons, Tin ... per gross, No. 2, $30, No. 3, $27, dis 10 %

PLANISHED TIN WARE.

Planished Coffee Pots, Round ... dis 25 @ 30 %

Each	·60	·75	·85	·95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round ... dis 25 @ 30 %

Each	·70	·80	·95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval ... dis 25 @ 30 %

Each	·70	·80	·90	1·05	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

Planished Pepper Boxes, No. 1 ... per doz., $1·52
Planished Flour Dredges, No. 3, $2·10; 4, 2·45 ₩ dozen.
Planished Round Coffee Biggins ... dis 25 %

Pints	2	3	4	5	6	8
Each	$1·00	1·10	1·20	1·40	1·60	2·00

Planished Oval Coffee Biggins ... dis 25 %

Pints	2	3	4	5	6	8
Each	$1·15	1·25	1·40	1·60	1·80	2·25

Planished Oval Chafing Dishes, Imperial Covers ... dis 25 %

Inch	10	12	14	16	18	20	22	24
Each	$3·85	5·00	6·25	7·60	9·00	11·50	15·00	16·50

Planished Oval Chafing Dishes, Low Covers ... dis 25 %

Inch	10	12	14	16	18	20
Each	$3·25	4·25	5·20	6·20	7·60	9·25

Planished Low Dish Covers ... dis 25 %

Inch	10	11	12	14	16	18	20
Each	$ ·70	·80	1·00	1·25	1·50	2·00	2·75

Planished Imperial Dish Covers ... dis 25 %

Inch	10	11	12	14	16	18	20	22	24
Each	$1·55	1·70	2·00	2·60	3·15	3·45	4·60	5·45	6·30

Planished Etnas, on Stands ... dis 25 %

Pints	1½	2	3	4	5
Each	$0·90	1·00	1·20	1·50	1·75

Planished Liquor Mixers ... dis 25 %

Nos.	0	1	2
Per doz.	$2·00	2·10	2·45

Planished Oval Melon Molds ... dis 25 %

Nos.	2	3	4	5	6	7	8	9
Each	$·60	·65	·70	·80	·90	1·00	1·15	1·35

Planished Oval Tumbler Warmers ... dis 25 %
To fit 1, 2, 3, and 4 O. G. Urns ... each, $2·50
Planished Oval O. G. Urns ... dis 25%

Nos.	0	1	2	3	4	5	6	7	8
Each	$4·90	5·45	6·30	7·00	7·75	9·25	11·25	12·50	15·50

Planished Round Urns ... dis 25 %

Nos.	0	1	2	3	4	5	6	7
Each	$4·20	4·85	5·45	6·30	7·75	9·00	11·00	14·25

Planished Round Oyster Dishes, (Complete) ... dis 25 %
Nos ... 1 2
Each ... $2·10 2·80
Planished Oyster Dish Plates ... dis 25 %
Nos ... 1 2
Each ... $0·25 0·30
Oyster Dish Covers ... dis 25 %
Nos ... 1 2
Each ... $0·30 0·35

Tea Pot Handles—P. S. & W ... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
 No. 1, Small 4½ inches ... per gross, $11·50
 No. 2, Medium, 5¼ " ... " 12·50
 No. 3, Large, 6½ " ... " 13·50
 No. 4, Ex. Large 7½ in., for Wash Pitchers &c ... " 18·00
Stow's Patent. New Pattern.
 No. 25, Small, 4½ inches ... per gross, $11·50
 No. 35, Medium, 5¾ " ... " 12·00
 No. 45, Large, 6½ " ... " 13·00
Solid Iron. Tin Tipped.
 No. 10, Small, 4½ inches ... per gross, $9·00
 No. 15, Medium, 5½ " ... " 9·50
 No. 20, Large, 6½ " ... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
 No. 12, Bronzed and Tin-Tipped ... per gross, $13·50
Saucepan Handles. Of Best Malleable Iron.
 P. S. & W ... dis 20 %
Japanned.
 No. 1, 5½ inches long ... per gross, $3·50
 No. 2, 6 " ... " 3·75
 No. 3, 6½ " ... " 4·00
 No. 4, 7½ " ... " 4·25
 No. 5, 8 " ... " 4·50
 No. 6, 9 " ... " 4·75
Tinned.
 No. 1, 5½ inches long ... per gross, $4·25
 No. 2, 6 " ... " 4·50
 No. 3, 6½ " ... " 4·75
 No. 4, 7½ " ... " 5·25
 No. 5, 8 " ... " 5·50
 No. 6, 9 " ... " 5·75
 Japanned ... per lb., ·16
 Tinned ... " ·20
Iron Kettle Ears (P., S. & W.) ... dis 45 %
 Half gross pairs in a package.
Tinned.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	88c	$1·00	1·50	1·75	2·10	2·75	3·50	4·75

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	75c	88c	$1·35	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle.

Nos	4	5	6
Per gross pairs	$1·75	2·10	2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos	1	2	3	4	5	6	7
Per gross pairs	$1·00	1·25	1·50	1·75	2·25	2·75	3·50

Malleable Iron Kettle Ears for Coal Hods, &c.
 P., S. & W ... dis 20 %
 No. 10 Small ... ₩ ℔, Tinned, 20c; Black, 16c
 No. 20 Medium ... ₩ ℔, " 20c; " 16c
 No. 30 Large ... ₩ ℔, " 20c; " 16c
 No. 40 Extra Large ... ₩ ℔, " 20c; " 16c
 In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in. dis 25
 Plain, 8c.; Japn'd, 9c.; Tinned, 16c. per lb.; Malleable Clips or Ears to match, Tinned ... 20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.) ... dis 35 %
 Plain with drilled holes, per lb ... 9c
 Plain with Cast " ... 8c
Plumbers' Scrapers—(P. S. & W.) ... dis 25 %
 Extra quality, length 6 in., per doz ... $4·00

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.
Pig Iron—AMERICAN.
 Foundry No. 1 ... ₩ ton, $25 00 @ 26 00
 Foundry No. 2 ... " 23 00 @ 24 50
 Gray Forge ... " 21 00 @ 23 10
 White and Mottled ... "
SCOTCH.
 Coltness ... " 40 00 @ 41 00
 Glengarnock ... " 37 00 @
 Eglinton ... " 35 00 @
 Summerlee ... " none
Bar Iron.
 Am. Refined, at mill ... nominal ...
Rails.
 Welsh, gold ... ₩ ton, 47 00 @ 50 00
 American, at works, currency ... " 48 00 @ 50 00
 Old Rails, currency ... " 27 00 @ 28 00
Scrap.
 Wrought Scrap ... " 28 00 @ 30 00

Bar Iron from Store.
Common Iron.
 ½ to 2 in. round and square ... } ₩ ton $60 00 @ 62 50
 1 to 6 in. x ⅜ to 1 in ... }
Refined Iron.
 ½ to 2 in. round and square ... } " 62 50 @ 65 00
 1 to 6 in. x ⅜ to 1 in ... }
 1 to 6 in. x ¼ and 3-16 ... " 67 50 @ 70 00
Shafting Iron—2½ to 4 in ... " 75 00 @ 90 00
Rods—3-16 to ⅜ round and square ... " 67 50 @ 110 00
Bands ... " 80 00 @ 82 50
Hoops—⅜ to 2 in ... " 90 00 @ 135 00
Swedish Iron.
 Ordinary sizes ... " 130 00 @ 132 50
 Plow size ... " 140 00 @ 142 50

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20 ... ₩ ℔	4½	5½c	5½c
21 to 24 ... "	4½ @ 4¾c	5¾c	5¾c
25 to 26 ... "	4¾c	5¾c	5¾c
27 ...	5c	5¾c	6c
28 ... "	5½c	5¾c	6½c

Galvanized, 1 to 20, prime, ₩ ℔ 10; 2d quality ... ₩ ℔ 9c
 " 21 to 24 " " 11 " ... " 10c
 " 25 to 26 " " 12 " ... " 11c
 " 27 " " 13 " ... " 12c
 " 28 " " 14 " ... " 13c
Patent Polished ... ₩ ℔ 15c
Russia, Nos. 8 to 16 ... " 17c
 " Stained, No. 1 ... " 16c
Belgian ... " 13c
One piece Corrugated Sheet Iron Elbows.
CHARCOAL IRON

½	5	5½	6	7 inch.
$2·50	3·50	4·50	5·25	6·50 per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$5·00	7·00	9·50	12·00	14·00 per doz.

BABBITT METAL.
N. P. U ... ₩ ℔ 8½ @ 9c
 A, 25c.; B, 20c.; C, 15c.; D, 12c., ₩ ℔.
COPPER—DUTY. Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.
American Ingot ... ₩ ℔ 23½ @ 24c
English " ... "
SHEATHING, BRAZIERS COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot ... 33c ₩ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot ... 35c. "
Braziers' Copper, 12 oz. per square foot and lighter ... 39c. "
Circles less than 84 inch in diameter ... 35c ₩ ℔
Circles, 84 inch diameter and over ... 39c. "
Segment and Pattern Sheets ... 35c. "
Locomotive Fire Box Sheets ... 33c. "
Sheathing Copper, over 12 oz. per sq. ft ... 31c. "
 " " 12 oz. ₩ sq. ft. and lighter ... 39c. "
Bolt Copper ... 33c. "
Copper Bottoms, 32 c. ₩ ℔ ... net
 No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier ... 36c. By the case, c. ₩ ℔
12 oz. and lighter ... 39c. " " 38c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier ... 38c. By the case, 37c. ₩ ℔
(And all sizes not over 20 inches wide.)
30x60
14 and 16 oz. and heavier ... 40c. ₩ ℔
12 oz ... 43c. "
TINNING.
14x48, by the case ... 8c. ₩ sheet
14x48, less than case ... 10c. "
Boiler Sizes, 7 and 8 inch ... 12c. "
 " 9 inch ... 15c. "
Other sizes not larger than 30x60 ... 2½c. ₩ sq.
Larger than 30x60 ... 5c. "
LEAD—DUTY Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.
Spanish ... 6¾ @ 7c gold
German Refined ... 6½ @ 6¾c gold
English ... 6½ @ 7c gold
American ... 6⅝ to 6½c gold
Bar ... dis 10 % ... 8½c.
Pipe ... dis 10 % ... 8½c.
Tin Lined Pipe ... dis 10 % ... 16½c.
Sheet ... dis 10 % ... 8½c.
Shot ... dis 10 %. Drop, 8½c.; Buck. 9½c.
SOLDER ... No. 1. 15c; No. 2. 13½ @ 14c
STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2½ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1½ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.
Tool ... 15 @ 16c
Spring ... 10c
Homogeneous ... 12½c
Tire ... 12½ @ 13½c
Machinery (round and square) ... 10 @ 11c
File ... 11c
Sheet ... 14 @ 16c
Saw Plate, mill and mulay ... 14 @ 16½c
Saw Plate, gang and X cut ... 13 @ 14c
 " circular as to size ... 18 @ 30c
Chrome Steel.
Tool ... ₩ ℔ 20 @ 21c
Tool, extra fine ... " 40 @ 75c
Spring ... ₩ ℔ 12c and upward
Machinery ... ₩ ℔ 14c
Hammer ... " 15c,
Gun or Homogeneous ... " 16c
English Steel,—payable in gold, dis 5 % cash.
 " Best Cast ... ₩ ℔ 18c
 " Extra Cast ... " 19c
 " Round Machinery, Cast ... " 11½c
 " Swaged, Cast ... " 18c
 " Best Double Shear ... " 18c
 " Blister, 1st quality ... " 13½c
 " " 2d quality ... " 11½c
 " " 3d quality ... " 10½c
German Steel, Best ... " 11½c
 do 2d quality ... " 10½c
Sheet Cast Steel, 1st quality ... " 18c
 " " 2d quality ... " 16c
 " " 3d quality ... " 14c
File Steel, Flat and ½ Round ... " 12½c
 " Square and Round ... " 13c
 " Mill ... " 13½c
 " Taper to 4 inch ... " 17c
 " Taper 3 and 3½ inch ... " 18c
SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.
Silesian, cash ... 6¾ @ 7c., gold
American " ... 6¾ @ 11c., currency
TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca ... ₩ ℔ 26½ @ 27c., gold
Straits ... ₩ ℔ 22½ @ 22¾c., gold
English ... ₩ ℔ 22 @ 22½c., gold
CHARCOAL TIN PLATE.
I C 10x14, Prime Charcoal ... 11·00 @ 11·25
 12x12, " ... 11·50 @ 11·75
 14x20, " ... 11·75 @ 12·00
I X 10x14, " ... 13·25 @ 13·50
 12x12, " ... 13·75 @ 14·00
 14x20, " ... 14·25 @ 14·50
D C 12½x17 " ... 10·50 @ 10·75
D X 12½x17 " ... 12·75 @ 13·00
 For each additional X add ... 2·25
COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$10·25 @ 10·75	9·50 @ 10·00	9·00 @ 9·50
I C 12x12	10·75	10·50	
I C 14x20	11·25	10·50	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$10·00	9·25 @ 9·75	7·75 @ 8·50
I X 14x20	12·25		
I C 20x28	20·00 @ 21·00	19·00 @ 19·75	16·50 @ 18·00
I X 20x28	26·00		
I C 20x200 ft.	24·00		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ ℔. All subject to a reduction of 10 per cent.
Sheet ... cask 9½c
 " ... open 10c

Paper Stock, Old Metals, &c

(Dealers' Selling Prices.)

Canvas linen ... 6½ @
 " cotton. No. 1 ... 6¾ @ 7
 " " No. 2 ... @ 5
White linen rags, No. 1 ... 6 @ 6½
 " " No. 2 ... 4½ @
Colored ... 2½ @
Mixed woolens ... @ 2½
Soft woolens ... @ 5½
Gunny bagging ... 1¾ @ 2
Jute Butts ... 2½ @ 2¾
Kentucky bagging ... 5½ @ 5¾
Book stock ... 4 @ 4½
Waste paper and scraps ... 1 @ 1½
Rope cuttings ... 1½ @ 3
Kentucky Bale rope ... 4 @ 4½
Oakum junk, No. 1 ... 5½ @ 5¾
 " No. 2 ... @ 4
Grass rope ... 3 @ 3½
Tarred Shaking ... 1½ @
White Collar Cuttings, all paper ... 7 @
 " " " muslin lined ... 5 @
 " Envelope " ... 7 @
Hard White Shavings, No. 1 ... 6½ @
Soft " " No. 1 ... 6 @
White Shavings, No. 2 ... 5½ @ 6
Mixed Shavings, part white ... 4 @ 4½
Imperfections, No. 2, best folded sheets ... 5 @
 " " 1, Heavy Stock ... 4½ @
Book Stock, Mixed ... 3½ @
 " " No. 2, light ... 2 @ ½
Prints ... 1½ @ 2
Pure Manilas ... 2
Bogus Manilas and Hardwares ... 1 @ 1½
Commons ... 1 @
Binders' Board Cuttings ... 1½ @ 2
Straw Board Cuttings ... 1½ @ 1¾
Old Metal.
Copper ... @ 20
Yellow metal ... 14 @ 15
Brass ... 13 @ 14
Heavy Composition ... 17 @ 18
Old lead, solid ... 6 @ 6½
Tea lead ... 4½
Wrought iron ... 1½ @ 1¾
Sheet iron ... 0¾ @
Cast iron ... 1 @ 1½
Machinery iron ... 1½ @
Zinc ... 5 @ 5½
Pewter, No. 1 ... 17
 " No. 2 ... 10 @ 12
Spelter ... 5½ @ 6

Paints, Oils, etc.

Paints.
Black, lamp—Coach Painters ... ₩ ℔ 30c
 " " Ordinary ... 6c
 " Ivory Drop, fair ... 15c
 " " best ... 20c
Black Paint, in oil ... kegs, 8c.; ass't'd cans, 11 c
Blue, Prussian, fair to best ... 50 @ 75c
 " " " " in oil ... 35 @ 65c
 " Chinese, dry ... 83c
 " Ultramarine ... 25 @ 30c
Brown, Spanish ... 1½c
 " Van Dyke ... 9c
Carmine, 40 ... $12 00
Green, Chrome ... 15 @ 25c
 " " in oil ... 18 @ 25c
 " Paris ... good, 30c; best, 40c
 " " in oil ... " 30c " 45c
Mineral Paints ... 1½ @ 4c
Orange Mineral ... 14½c
Red Lead, American ... 9½c
 " " English ... 10½c
 " Venetian (N. C.) dry ... 2½c
 " " in oil ... ass't'd cans, 11c; kegs, 8½c
 " Indian, dry ... 10c
Rose Pink ... 13c
Sienna, American, Raw ... 4c
 " Burnt ... 4½c
 " " in oil ... 16 @ 20c
 " Raw " ... 15 @ 25c
Umber, Burnt ... 4 @ 8c
 " " in oil ... 16 @ 21c
 " Raw ... 3½ @ 7½c
 " " in oil ... 16 @ 22c
Vermillion, Chinese ...
 " English ... 1 95
 " Trieste ... 1 05
 " American, Common ... 25c
White Lead, American, pure dry ... 10c
 " in oil ... 11c
White, Paris, English, prime ... in bbls. 2½ @ 2½c
Yellow Ochre, French ... 2½ @ 2¾c
 " " in oil ... ass't'd cans, 11c; kegs, 8½c
 " " Vermont ... in casks 1½c
 " Chrome ... 17 @ 27c
 " " in oil ... 18 @ 28c
Zinc White, American No. 1 dry ... 9c
 " " 1, in oil ... 11c
 " French (Paris) ... 11 c
 " " in oil ... 12 c
Oils.
Linseed Raw ... ₩ gal. casks, 79c. bbls. 80c
 " Boiled ... " 81c. " 85c
Whale, Crude ... "
 " Bleached Winter ... "
Sperm, Crude ... " 1·60
 " Winter unbleached ... " 1·82
 " " Bleached ... " 1·90
Seal, Extra Refined ... "
Lard, Pure Winter ... "
 " Spring ... " 1·00
Cotton Seed, Crude ... " 60c
 " Southern Yellow ... " 65c
 " White ... "
Neatsfoot, Winter ... 70c @ $1·10
Natural Lubricating ... 38c @ 40c
Sundries.
Asphaltum ... 9c
Benzine ... ₩ gal. 16c
Chalk ... 1½c
 " Block ...
Dryer, Patent, Am'n ... ass't cans, 10½c.; kegs 9c
 " " English ... " 11c.; " 9c
Flocks ... 50c
Frostings ...
Glue, White ... 33 @ 47c
 " Sheet ... 20c
Glaziers' Points, Zinc ... 9c
Gum, Copal ... 35c
 " Damar ... 25c
 " Shellac, English ... 75c
 " " " dark ... 70c
Litharge ... 10c
Pumice Stone, selected Lumps ... 4 @ 6c
 " powdered ... 4c
Putty in bladders ... 3½c
 " in bulk ... 3c
Rotton Stone, soft, English ... 8c
Spirits Turpentine ... 37c
Whiting, Spanish ... 1c

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Bennett Hotchkiss and N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of BENNETT HOTCHKISS (who in an interference case with Goulding and Cheney was declared the first inventor) and N. C STILES. Our improvements consist:

First.—Of an arrangement of parts that makes it the most complete Jobbing Hammer, and will take the place, to a great extent, of all other kinds for forging. In addition to the upright rod, which is operated by the hammer to open and close the rolls, we place another rod the lower end of which is secured to the end of a lever which is operated by the hand or foot, which operation also opens and closes the rolls at will. The lower end of this rod has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer. The belt or board passes up between two clamps situated under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold up the hammer. To let the hammer fall the clamps are opened by pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back roll is made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable collar on the upright rod allows the operator to obtain *any hight* of blow desired automatically. If one blow is wanted, press upon the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blows will be repeated until the pressure is removed. If a blow of less hight than the collar is set for is required, work the hand lever, which will give you any hight of blow desired. The hammer can be held up at any point below the collar by bringing the hand lever into action when the hammer is at the desired hight, so that the next blow can be given from a state of rest, of less hight than the collar is set for. This is a feature no other drop has; that is, the first blow struck can be of less hight than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the boar from touching either roll and prevents the same from being worn uneven.

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Manufactured by

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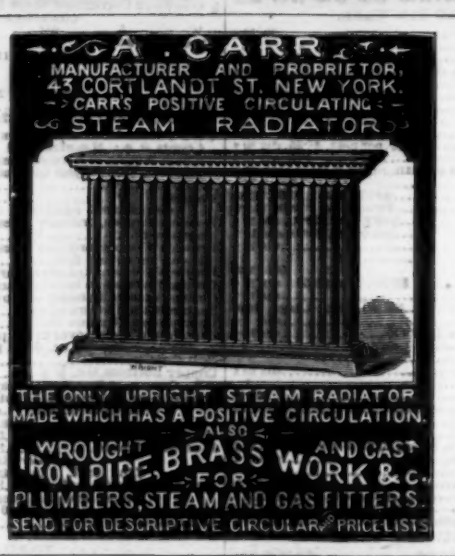

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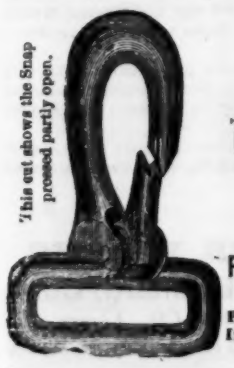

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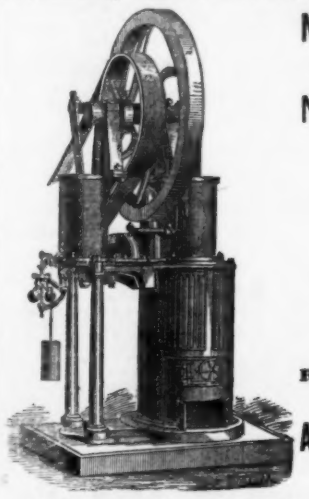

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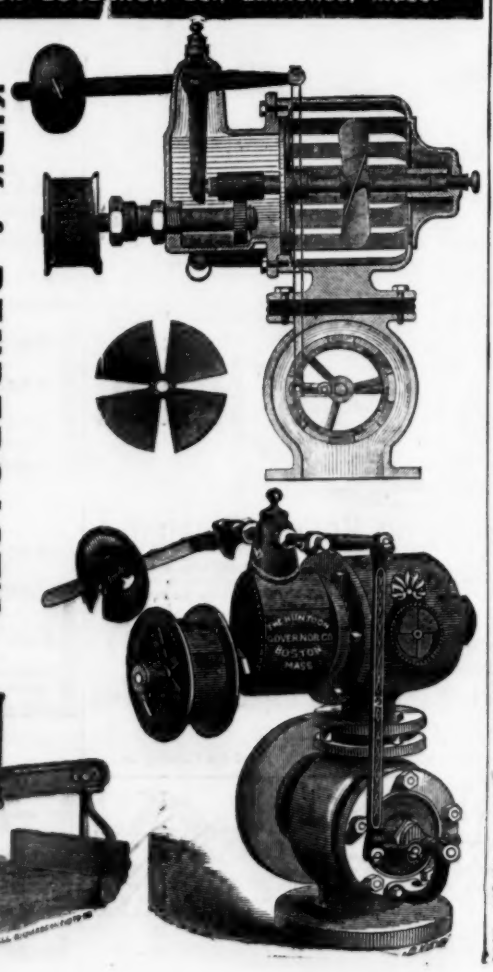

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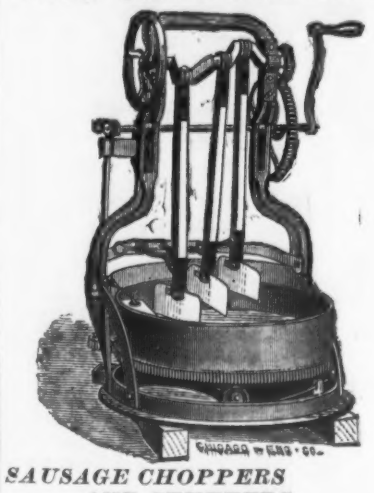

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Fig. 1 shows it as applied to a pair of pencils, and Fig. 2 represents a steel point, connected with a spring socket, which may be slipped over the point of either of the pencils thus forming a pair of steel pointed dividers.

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Instrument with 2 Pencils and one steel point	$3·00	$33·00
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Fig. 2.

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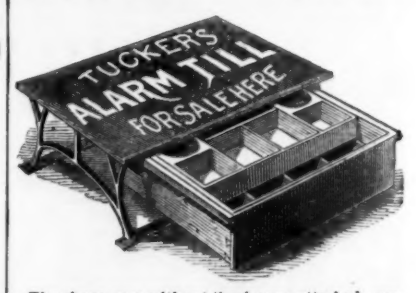

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Victor..... " 6 75 net
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Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 30&5 %
Douglass' & Ives' Augers.....dis 30&10 %
Watrous' Ship Augers.....dis 10 %
Bonney's Pat. Hollow Augers.....dis 25 %
Stearns' Patent Hollow Augers.....dis 25 %
Balances.—Landers, Frary & Clark's....dis 20 @ 22½ %
Chattillon's.....dis 20 @ 22½ %
Morton's.....dis 20 @22½ %
Common Spring with Hook..... ₩ doz $1 38 @ 2 00
Bells.—Bevin Bros. Mfg Co. Light Hand Bells.....dis 60&10 %
Other makers light.....dis 65&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50 %
Great Western and Kentucky Cow.....dis 50&10 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 15 @ 20 %
Douglas Mfg. Co., complete with augers..dis 15 @ 20 %
Common Boring Machines, no Augers.....$4 25 @ 4 00
Anguiar " " ..... 5 25 @ 5 00
Bolts.—Eastern Carriage Bolts .....special prices
Western " " ..... "
Philadelphia " " .....dis 50&5 @ 50&10 %
" Eagle, (Coleman's).....dis 50&5 @ 50&10 %
Wrought Snutter.....dis 50 @ 50&5 %
Braces.—Barber s.....dis 40&5 %
Fackus.....dis50 %
Bartholomew s American Ball.....dis 10&10 %
Spofford.....dis 40 @ 40&5 %
Butts.—Cast Fast Joint, Narrow.....dis 30 %
" " Broad.....dis 50 @ 50&5 %
Cast Fast Loose Joint.....dis 50 @ 50&5 %
" Acorn, Loose Pin.....dis 50 %
Wrought Loose Pin.....dis 35 %
" Table Hinges and Back Flaps.....dis 30 %
" Narrow.....dis 30 %
" Loose Joint.....dis 35 %
" Reversible.....dis 35 %
Parker's Blind Butts.... } Discount 50 % by the case
Shepard's " .... } 50&10 %.
Clark's " .... }
Cherrytree " .... }
Lull & Porter's Blind Butts.....dis 45&50 %
Chains.—German Halter.....dis 15 @ 20 %
" Coil.....dis 15 @ 20 %
Galvanized Pump..... ₩ lb 15c
Best Proof Coil Chain—

₩ lb....	13½	10⅜	9¼	9	8¾	8½	8c gold
	5-16		3-16	¼	7-16	½	⅝ in.

By the cask, 500 lbs., discount ½c per lb. Common Chain, ¼c per lb. less than proof.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
Tang " .....dis 40 @ 40&10 %
Beatv's Framing and Firmer.....dis 10 @ 15 %
Casters.—Porcelain Wheel.....dis 40&10 %
Iron and Brass Wheels.....dis 40 %
Iron Bed.....dis 40 %
Clothes Wringers.—Universa..... per doz $68 00
Novelty. " " 88 00
Monitor. " " 53 00
Discount in 2dozen lots. $2 per dozen.
Coffee Mills.—Common Box and Side.....dis 10 @ 15 %
Patent Box and Side.....dis 10 @ 15 %
Cutlery.—American Pocket (best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co. s .....dis 60 @ 60&10 %
Concave Adjustable Handle.....dis 10 %
Beatty.....dis 10 @ 15 %
Fry Pans.

Tinned.....								dis 20 %
₩ doz..	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00 7·50
No.....	0	1	2	3	4	5	6	7 8
Burnished								
₩ doz..	$2·80	3·00	3·38	3·75	4·12	4·50	5·00	5·62 6·75
No....	0	1	2	3	4	5	6	7 8

Files.
Nicholson Mill Files...new list, $5 00 to £ cur dis 2½ %
" Bastard..... " 5 00 to £ cur dis 1½ %
" Taper..... " 5 00 to £ cur dis 1½ %
Butcher's Mill.....$5 50 to £ gold
" Bastard..... 5 50 to £ gold
" Taper..... 5 50 to £ gold
Fluting Machines.
K. F. M.—4½ in. rolls, $5·50.....dis 10 %
" —6 in. rolls, $6·65.....dis 10 %
Mrs Knox—4 in. rolls, $5·50.....dis 10 %
" —6 in. rolls, 6·65.....dis 10 %
Hammers.
Yerkes & Plumb's.....dis 15 %
Hammond & Son's.....dis 15 %
Verce.....dis 15 %
Hatchets.
Beatty's.....dis 10 @ 15 %
Shingling and Half. { ₩ doz.. $7·00 7·50 7·75 8·00
{ No..... 1 2 3
Yerkes & Plumb.....dis 15 %
Shingling and Half. { ₩ doz.. $7·00 7·50 8·00 8·50
{ No..... 1 2 3 4
Claw.... { ₩ doz.. $7·50 8·00
{ No..... 1 2 3
Hinges.—Strap and T.....dis 40 %
Parker's Blind..... } Discount 50 %. By the case
Shepard's " ..... } 50&10 %.
Clark's " for wood... }
Cherrytree Blind for wood. }
Lull & Porter's Blind.....dis 40&10 %
" .....by the case dis 5) %
Clark's Mortise Blind.....dis 40 %
Horse Nails. Nos. 6 7 8 9 10
Ausable..... 27 25 24 23 22
Globe..... 28 26 25 24 23
Brundage..... 26 24 23 22 21
Nos. 5 6 7 8 9 10
Putnam..... 33 28 26 25 24 22
On Ausable. Globe and Brundage 1000 lb lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.....dis 45 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 50 %
Scandinavian Pad Locks.

₩ doz.....	$10·50	10·50	12·00	12·00	13·00	15·00	dis 15 %
No.....	9	9¼	10	10½	11	11½	
₩ doz.....	$13·00		18·00		22·00	22·00	dis 15 %
No.....	12		12½		13	13½	

Trunk Locks.....dis 5 @ 10 %
Thumb and Roggens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 60 @ 60&10 %
Lincoln's " .....dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets.....dis 20 @ 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 10 %
Woodruff.....dis 10 %
Stowe.....dis 10 %
Hale's.....dis 25 %
Stuffers.....dis 10 %
Planes.—Auburn Tool Co., "Bench ".....dis 35 @ 35&5 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Plumbs and Levels.
Stanley Rule and Level Co.....dis 60&10 %
Wm. Johnson. (Stanley List).....dis 60&10 %
Rakes.—Cast Steel Garden.....dis 50½ %
Malleable Garden.....dis 35½ %
Wood Head Iron Teeth.....dis 30 @ 40 %
Rules.—All Maker's Boxwood...dis 60&10 @ 50, 10&10 %
All Makers Ivory.....dis 50 %
Steelyards.—American Pattern.....dis 15 %

₩ doz.....	$7·00	8·67	10·67	12·67	14·67	16·67
No.....	50	100	150	200	250	300

English Pattern.....dis 15 %

₩ doz.....	$7·00	8·67	10·67	12·67	14·67	16·67
No.....	50	100	150	200	250	300

L. F. & C. Excelsior.....dis 10 %

₩ doz.....	$9·00	10·00	12·00	15·00	18·00	21·00
No.....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz. $11·00 net
Clipper No. 10, Boxed and Sharpened..... ₩ doz $10·50
" 5, " " " 10·00
Common Scythes..... ₩ doz $7·00 @ 10·00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 12½ %
Disston's Hand.....dis 12½ %
W. McNiece's H'd, Cross-Cut & Circ'r, new list. dis 15 %
Boynton's Lightning, new list.....dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Sept. 1st.....dis 30 %
" Back Strap " .....dis 30 %
Oliver Ames & Sons.....new list dis 12½ %
Brady Shovel Co.....dis 12½&5 %
Sad Irons.—Richmond (polished face) per lb. 4 c. net
Richmond (polished face)... by the cask " 3½c net
Stone.—Arkansas Oil, No. 1..... ₩ lb $1·75
Turkey Oil, No. 1..... " 1·00
Washita Extra..... " 50c
" No. 1..... " 22c
" " 2..... " 15c
" ..... " 5½c
Screws.—Iron.....new list, Jan. 1st, 1874, dis 54¼ %
Brass.....dis 54¼ %
Spoons.—
Plated.....dis 40&5 %
Britannia.....dis 40&10 %
German Silver.....dis 20 %
" Light.....new list dis 15&5 %
Lalance & Grosjean Iron.....dis 10 %
Springs.—Gray's Door.....dis 40 %
Torry's Door.....dis 40 %
Stocks and Dies......dis 15 %
Stove Polish.—Gem..... ₩ gross, $5·00
Onyx..... " $5·00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 72½ %
" " by the case...dis 72½&7½ %
Clout and Finishing Nails.....7½ %
" " " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " " .....dis 30 %
Vises.—Solid Box..... ₩ lb net 15c
Wrenches.—Coes Genuine.....dis 40 %
Coes Imitation Wrought Bar.....dis 50 %
" " Malleable Bar.....dis 60 %
" " (Kellogg) Malleable Bar.....dis 60&10 %
Tafts Pattern (Wrought Bar).....65 %
" " Kellogg's (Nail Bar).....dis 60&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " " Improved Baxter.....dis 25 %
" " " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....dis 40 %
No. 19 to 26.....dis 45 %
No. 27 to 36.....dis 45 @ 47½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 20 %
Galvanized Wire No. 0 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Sept. 12, 1874.

Augers—Snell Mfg. Co.....dis 20 %
Bits, Auger—Snell Mfg. Co.....dis 20 %
Bells, Cow—Haw s Genuine.....dis 30 %
Bolts—Carriage and Tire.....dis 75&10 %
Braces—Bit, Spofford's Patent.....dis 40&5 %
Brads, Cut.....dis 50&7½ %
Boards—Stove, Brooks' Patent.....dis 30 %
Butts—Brass.....dis 25 %
Wrought Narrow.....dis 30 %
" Broad, Loose Joint.....dis 35 %
" Table and Back Flaps.....dis 30 %
Wrought Butts, Loose Pin.....dis 35 %
Belting—Rubber.....dis 30 @ 35 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1·50
" Rutherford " .....$1·00
Chalk—White, Carpenter s ..... ₩ gross, 50c
Red, Carpenter's ..... " 75c
Blue, " ..... " 90c
Chisels—Firmer Socket.....dis 60&10 %
Framing Socket.....dis 60&10 %
Corner Socket Chisels.....dis 60&10 %
Slick's Carpenters'.....dis 60&10 %
Castings—Malleable ..... ₩ lb 10c
Clothes Wringers, "Novelty " No. 2..... ₩ doz $38 00

Elbows—Corrugated.....	5	5½	6	7	dis 10 %
Charcoal.....	3·50	4·50	5·25	6·50	
Russia.....	7·00	9·50	12·00	14·00	

Files—Maischoss Bros.....dis 50 %
Freezers Ice Cream—" Champion .....dis 33⅓ %
Hammers—Henry W. Kip's.....dis 7½ %
Hinges—Window Blind—
Clark's.....dis 50&10 %
Shepard's and Standard.....dis 55&10 %
Wrought Strap and T.....dis 50&10 %
Hods, Coal—Plain, Black and Galvanized.....dis 10 %
Funnel, Black and Galvanized.....dis 10 %
Fancy and Helmet.....dis 10 %
Palace Coal Vases.....dis 10 %
Hooks and Staples—Wrought.....dis 60&10 %
Hooks—Belt.....dis 50&10 %
Hasps and Staples—Wrought.....dis 60&10 %
Sad Irons.....4c
Kettles—Brass..... ₩ lb 50c
Enameled.....dis 50&5 %
Knives, Drawing—Oval No. 1.....dis 60&10 %
Razor Blade.....dis 50&10 %

Lanterns "Peerless,".....No.	4	5	10	dis 10 %
₩ doz	$26 00	$10·50	$13 75	

Tuquiar.....
" with Guards.....
Machines—Apple Paring, "Turn Table".....8·00 ₩ doz
Mills, Coffee—Box and Slide, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American .....dis 20 %
Nails—Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %

Horse, Ausable.....No.	5	7	8	9	10	
	30	27	25	24	23	22c
" " Finished & Pointed.....						add 1c ₩ lb
" " 1000 lbs.....						dis 5 %
" Clinton.....No.	6	7	8	9	10	
	22	20	19	18	17c	

Packing—Rubber.....dis 30 @ 35 %
Pencils, Slate—Soapstone..... 4 5 6in.
30 40 50c. ₩ 100
Case lots.....
Paint—White Lead, U. S. Gov't.....dis 20 %
Rivets—Iron. Black and Tinned.....dis 25&7½ %
Rope—Manila, ½ inch and larger..... ₩ lb 15½c
Screws—"American Screw Co"—
Flat Head, Iron.....dis 52½ %
Flat Head, Brass.....dis 52½ %
Staples—Blind, Boardman s Pat., ½ & ⅝..... ₩ lb 31c
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 40&10 %
Britannia.....dis 40&10 %
Squares—Steel and Iron.....dis 25&10 %
Shoes, Horse—H. Burden & Sons..... ₩ keg $6·00
Saws—Henry Disston & Sons.....dis 10 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Traps, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vises—Parallel, Buffalo.....dis 20 %
Ware—French, Tinned and Iron.....dis 25 %
Stamped and Japanned.....dis 10 %
Cast Iron Hollow.....dis 33½ %
Tin Plates.—Add for each X.....25c
10x14, IC, Charcoal...$11·25, 14x20 C. terne.....$10·25
12x12, " ... 11·75 | 20x28 C. " ..... 21·50
12½x17, " ... 10·75 | 20x28 X. " ..... 26·00
14x20, " ... 12·25 |
Pig Tin—Straits..... 38c @ 39c
Bar Tin.....30c
Solder.....No. 1, 15c; No. 2, 14c
Sheet Zinc—
"Lasalle'.....570 ₩ 100 lb casks
$10·00 10·50 ₩ 100 lbs
Sheets.....$10·00
Iron Wire—Bright and Annealed.....dis 40 %
Coppered.....dis 35 %
Tinned.....dis 15 %

Tinned Broom,	Nos. 20	21	22	dis 20 %
	20c	21c	21c	

Copper—Sheathing 14 @ 18 oz..... ₩ lb 33c
Planished..... ₩ lb
Bottoms..... ₩ lb 33c
Bolts..... ₩ lb 35c
Braziers' Sheets..... ₩ lb 37c
Sheet Iron.—
18 Common.....$4 25
24 Common.....5 25
24 W. D. Wood & Co., Smooth Finish.....5 90
Am. Russia..... A. B.
15c 12c
Gen. Russia, No. 1 stained..... 18c
" " clean..... 19c
Galvanized.....dis 15 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$11 50 @ 12·00
I. X. 10x14 Charcoal..... 14 50 @ 15·00
I. C. Terne 14x20..... 10·00 @ 13·25
I. C. Terne 20x28..... 21·50 @ 25·00
I. C. Continuous..... 24·00
Block Tin.—
Pig.....₩ lb 27c @ 29c | Bars.....₩ lb 31c
Solder.— | A I..... ₩ lb 19c
S. & Co.....₩ lb 23c | Roofing ..... " 17c
Lead.—Pig.....₩ lb 7½c. | Bar.....₩ lb 8½c
Copper.—
Ingot.....₩ lb @ 74c | Sheets, 6 to 9 lb...₩ lb 38c
Planished..... " @ 80c | " 10 to 12 oz... " 35c
Sheathing..... @ 32c | Braziers 13 lb..... " 37c
Copper Drops @ 32c | Copper Bottoms.. " 31c
Zinc. Cast, 500 to 1000 lbs..... ₩ lb 10½c
Case, 100 lbs..... " 11 c
Slab..... " 7½c
Brass.—
Roll, No. 6 to 20. ₩ lb 30c | Roll, No. 38 to 40... ₩ lb 50c
" 30 to 38. " 35c | Wire, No. 0 to 20... ₩ lb 35c
" 20 to 25.. " 40c
Babbit Metal.—
Sellew & Co.....₩ lb 35c | Allens'..... ₩ lb 20c
Market..... 12c
Antimony..... ₩ lb 17c
Bismuth..... ₩ lb $4 00
Nickel..... ₩ lb $2 50
Sheet Iron.— | Planished A..... ₩ lb 15c
Gen. Russia..... ₩ lb 20c | " B..... " 12½c

	Com. B.	Smooth Fin. S. L. U.	Smooth D Re'd.
15 to 20.....	4·4c	5·5c	7·5c
22 to 24.....	4·6c	5·6c	7·6c
26.....	4·8c	5·8c	7·8c
27.....	5·0c	6·0c	8·0c

Cynalnized Iron.—Full bundles.....dis 20 %
Nos. 18 to 20..... 12c | No. 26..... 14c
22 to 24..... 13c | 27..... 15c
Bar Steel.—Silver, ₩ lb 16c; Crescent, 21c.
Iron Wire.....dis 35 %
Enameled Ware.....dis 45 %
One Piece Corrugated Elbows.....dis 10 %

Chalcoal Iron.		Russia Iron.	
4½ inch.....	₩ doz $2·50	4½ inch.....	₩ doz $5·00
5 "	" 3·50	5 "	" 7·00
5½ "	" 4·50	5½ "	" 9·50
6 "	" 5·25	6 "	" 12·00
7 "	" 6·50	7 "	" 14·00

Lender Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

₩ doz.		₩ doz.	
2-inch.....	$1 75	2½-inch.....	$2 75
3-inch.....	2 25	3½-inch.....	3 25
4-inch.....	2 50	4½-inch.....	3 50

Sheet Iron Bread Pans..... ₩ lb 10c
American Broilers..... ₩ doz. $13·50
Tinmen's Machines.....dis 5 %
Sad Irons..... ₩ lb. 31c
Brass Kettles.—Ansonia.....48c
Dog Irons.....3½c

PITTSBURGH.

The following are the Card rat s of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, c. card rate, 2 % off net.
Flat Rail (1½x¼), punched and coun'sunk..4·4c ₩ lb net
Iron Wedges.....4½c ₩ lb net
Norway Nail Rods.....9¼c ₩ lb net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point).....5c ₩ lb net
Beetle Rings.....8½c ₩ lb net
Fence Pickets—
¾ round, bent to shape, 30c ₩ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts (new list).....70&10 % off net
Plow Bolts.....50, 10&5 % off net
Stove Bolts.....15 % off net
Machine and Square Head Bolts.....30&10 % off net
Coach and Lag Screws.....30&10 % off net
Bolt Ends.....35 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅜ in.....7½c ₩ lb off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in.....6 c ₩ lb off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅜ in.....9 c ₩ lb off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅜ in.....7 c ₩ lb off net
Nuts and Washers in 25 lb. boxes, 1c ₩ lb ex. Nuts and Washers in lots less than one keg each size, 1c ₩ lb ex. Nuts and Washers in 5 lb. boxes, 1½c. ₩ lb ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 3¾c ₩ lb net; ⅞. ¾ in. diam. 3¾c ₩ lb net; ⅝ in. diam. 4c ₩ lb net.
Patent Headed Harrow Teeth, packed in casks, ¼c ₩ lb ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 5¼c ₩ lb net; 9-16 in. diam. 6½c ₩ lb net; ½ in. diam. 7½c ₩ lb net. 1c ₩ lb extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¾ to 1 in. diam. 9c ₩ lb net; ⅝ in. diam. 10c ₩ lb net; ½ in. diam. 12 c ₩ lb net.
Screw and Strap Hinges, in lots of 100 pairs or more, 1f to 2f in. long, 5¾c ₩ lb net; 8, 1u & 12 in. long, 6¾c ₩ lb net
Strap and T Hinges.....20 & 10 % off net, delivery as customary.
For purchases amounting to $250 between May 30th and December 31st, 5 % extra off.
Screw Hitching Rings.....$5 25 ₩ 100 net
Duck Nest Tuyere Irons.....$14 50 ₩ doz net
Cast Iron Washers..... ₩ lb 4c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long..... ₩ lb 4 c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 4½c net
1 to 2 in. diam. from 1½ to 4 ft. long..... " 4½c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long..... " 4½c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long " 5½c net
Bridge bolts with upset ends.....¾c. ₩ lb extra
Wrought iron plates, punched.....5c. ₩ lb net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End, ₩ set of 8 bolts..							55c
12 "	"	½	"	"	8	" ..	70c
10 "	9-16	"	"	8	" ..	}	90c
12 "	9-16	"	"	8	" ..		
14 "	9-16	"	"	8	" ..		$1 00
10 "	⅝	"	"	8	" ..	}	1 00
12 "	⅝	"	"	8	" ..		
14 "	⅝	"	"	8	" ..		1 10
16 "	⅝	"	"	8	" ..		1 20

5c ₩ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each.....18c
" " wide track, each.....20c
Single Tree Irons, ₩ set of four pieces.....38c
Wrought Iron Bolster Plates, 2¾ in. wide, ₩ set.....60c
" " 3 " " 65c
" " 3½ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets, each.....16½c
" " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each.....16 c
" " light " each.....13½c
" Rub Irons, each.....11 c
Stay Chain Hooks, each.....8 c
Double and Single Tree Clips, figure 1, each.....9 c
" " " 2, each.....10 c
" " " 3, each.....12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 sets.....dis 25 %
Wagon Box Staples, 1¼ to 2½ in. to clinch. ₩ 1000 $11 00 net
" " " Bevel Box Iron, to rivet on. ₩ 1000 7 50 net
Neck Yoke Eyes, each.....4¾c net
" " with ⅝ rings, each.....7¾c net
King Bolts, ⅝, 1, 1¼, and 1½ in. diam..... ₩ lb 4½c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths..... " 8½c net
Wagon Rivets, 3-16 in. diam., all lengths..... " 9½c net
" & Nails, in 5 lb paper boxes.... ₩ lb 1c extra
" " in 25 lb wood " ½c extra
Wagon and Hinge Nails, ¼ in..... ₩ lb 17 c net
" " 3-16 in..... " 19 c net
Double Tree Plates..... " 8½c net
Coupling " ..... " 5½c net
Tongue " ..... " 9 c net
Neck Yoke Plates..... " 11 c net
Tongue Cap Iron, 1¾, 2 & 2¾ in. wide, same price ₩ lb as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ₩ lb 10½c net. ¼ in., 11½c. net

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal.
IC, 10x14.....$11 25
IX, 10x14..... 14 00
XX, 10x14..... 16 75
IC, 12x12..... 11 75
IX, 12x12..... 14 50
IC, 14x20..... 12 25
IX, 14x20..... 15 00
XX, 14x20..... 17 75
XXX, 14x20..... 20 50
XXXX, 14x20..... 23 25
DC, 100 Plate..... 10 75
DX " 13 50
DXX " 16 25
DXXX " 18 00
DXXXX 100 Plate... 21 75
IX, 14x14..... 23 25
IC, 10x14 W..... 10 75
IX, 10x14 W..... 13 50
Roofing Tin.—Best Char.
IC, Terne, 14x20.....$10 25
IX, " 14x20..... 13 00
IC, Terne, 20x28..... 21 50
IX, " 20x28..... 25 50
Coke Tin.—
IC, 10x14 Coke..... $9 50
IX, 10x14, Coke 12 25
IC, 14x20, " 10 50
Sheet Zinc.—
Any width.....11c
Copper.—
Sheathing.....32c
Copper Bottoms.....32c
Planished Copper.—
Sheathing, 14x48.....39c
Boiler Size, No. 7.....41c
" " No. 8.....41c
" " No. 9.....41c
Tinning ₩ sheet, 14x48.....10c
" " No. 7.....10c
" " " 8.....14c
" " " 9.....16c
Pig Tin.—
Large Pigs.....29c
Small Pigs.....29c
Bars.....30c
Solder.—No. 1.....17c
No. 2.....16c
Bright Wire....dis 37½ %
Sheet Iron.—
No. 18 Am. Com.....4 50
No. 24 Am. Com.....5 00
Russia. No. 9, 10, 11&12, 18½c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 30
" 25 & 26..... 6 50
" 21 to 24 Charl.. 7 80
" 25 & 26 " .. 8 00

LIST OF HARDWARE DEALERS.

Having compiled a complete list of the **Hardware Dealers** in the United States, expressly for addressing circulars, I am prepared to receive orders for addressing **ENVELOPES, CIRCULARS, &c.** The printed address is cut from the list and stamped upon the envelope or wrapper, thus enabling me to address a great number in a short space of time, and at rates far below the prices usually paid for this work. It answers all purposes, and can be done for one-third the expense of addressing by hand. My list contains names of over 4000 dealers, each State, city and town therein, being compiled separately. Wholesale Dealers and Manufacturing Co.'s, whose custom it is to send out circulars, price lists, &c., to the trade throughout the States cannot fail to find my list and style of addressing a great advantage to them, as it is a great saving of both time and expense. It has been tried by a large number in the trade, some of whose names appear at the bottom or this circular and to any of whom I would most respectfully refer. My rate for addressing is $2·50 per M. Envelopes, &c., sent to the address below, will receive prompt attention, and will be addressed and returned at once, or envelopes, &c., will be furnished at market prices. For further information, address,
CHAS. R. SMITH, No. 113 Broad St., N. Y.

REFERENCES.

Union Nut Co., 73 Beekman St., L. Boardman & Son, 82 Chambers St., Millers Falls Co., 73 Beekman St., E. M Boynton, 80 Beekman St., Yale Lock Mfg. Co., N. Y.

P. S.—Copies of my list will be forwarded to any address throughout the U. S. upon receipt of $2·50.

NEW YORK, February 26, 1874.

Steel.

THREE CLASS PRIZE MEDALS, CLASSES 1, 21, 29, 1851 Exhibition of Industry, LONDON, 1851

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1st UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

COCKER BROTHERS,

SUCCESSORS TO

SAML. COCKER & SON.

(Established 1752.)

SHEFFIELD, ENGLAND

MANUFACTURERS OF

CAST, [illegible], SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.

BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;

Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS, HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS, FISH HOOKS, NEEDLES. &c.

ALSO

GENERAL MERCHANTS.

Agent, JONATHAN HATTERSLEY, Cincinnati, O.

WM. JESSOP & SONS,

MANUFACTURERS OF

STEEL,

AND IMPORTERS OF IRON

SHEFFIELD, ENGLAND.

PRINCIPAL DEPOTS:

NEW YORK, Nos. 91 and 93 John Street.....BOSTON, No. 141 Federal.

ST. LOUIS, No. 714 North Second Street.

AGENCIES

PHILADELPHIA, Jas. C. Hand & Co.....PROVIDENCE, Nightingale & Kilton.

CHICAGO, Crerar, Adams & Co.....NEW ORLEANS, Folger & Co.

CINCINNATI, Augustus Wessel.....SAN FRANCISCO, Huntington, Hopkins & Co.

F. W. MOSS,

Successor to JOSHUA MOSS & GAMBLE BROS.

FRANKLIN WORKS, WADSLEY BRIDGE WORKS, WALKLEY WORKS, } SHEFFIELD, ENGLAND.

MANUFACTURER AND IMPORTER OF

STEEL AND FILES.

Principal Depots: 80 John St., N. Y., and 512 Commerce St., Phila.

MOSS & GAMBLE **SUPERIOR C. S. "FULL WEIGHT" FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.

Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.

Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.

English Spring and Plow Plate Steel. Also, manufacturer of

Sheet Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

And GENERAL MERCHANT.

A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

MANUFACTURERS OF

STEEL, STEEL WIRE, &C.,

AND GENERAL MERCHANTS,

CARLISLE WORKS, SHEFFIELD, ENGLAND.

AGENCIES

New York, 72 John Street.

Philadelphia, 505 Commerce Street.

Boston, 21 Oliver Street.

New Orleans, La., 111 Gravier St.

BARROW HÆMATITE STEEL COMPANY,

LIMITED.

BARROW IN FURNESS, LANCASHIRE, ENGLAND.

MANUFACTURERS OF

Steel Rails, Tyres, Wheels,

Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc.

CHAS. CONGREVE & SON,

Sole Agents for the United States,

104 & 106 John Street, opposite Cliff Street, NEW YORK.

J. & RILEY CARR,

MANUFACTURERS OF SUPERIOR

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

DOG BRAND FILES,

Unsurpassed, if equaled in quality.

Bailey Lane Works, Sheffield, England.

Warehouse, 82 John St., New York.

Established 1810

HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

DARNALL WORKS, ATTERCLIFFE FORGE, } SHEFFIELD, ENGLAND.

Sole Manufacturers of the CELEBRATED

CAST STEEL,

Warranted most SUPERIOR and UNSURPASSED for

TOOLS and GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND of English Steel, and

ARMITAGE'S GENUINE MOUSEHOLE ANVILS,

For Sale by

EDWARD FRITH, 16 Cliff Street, New York.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 95 John Street, New York.

In calling the attention of consumers of Steel in any of the articles above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class Material in quality, temper, and durability is needed.

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for Turning Tools, Taps, Dies, Drills, &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*

Warehouse, 57 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

CHROME STEEL COMPANY,

MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Principal Office, 110 Liberty St., N. Y., WILLIAM TOOTHE, General Agent.

AGENCIES,

Potter & Hoffman, Philadelphia, Pa. Harris, Rice & Co., St. Louis, Mo.

Kimbark Bros. & Co., Chicago, Ills. Wood & Leggat, Hamilton, C. W.

Works, Corner of Keap St. & Kent Ave., Brooklyn, E. D.

Steel.

Sheffield Steel Works.

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of Extra Quality Tool

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of Cast and German

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Bars, ow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works

Wolverhampton, England,

MANUFACTURERS OF

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.

Also, Plow and other Iron.

VAN WART & McCOY, Agents,

43 Chambers St., New York.

A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

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Gunpowder.

GUNPOWDER

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS

ESTABLISHED IN 1801,

Have maintained their great reputation years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle, and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER.

of all kinds and descriptions.

For sale in all parts of the country. Represented by

F. L. KNEELAND

70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder

Orange Rifle, Orange Ducking

Lightning, Audubon.

SAFETY-FUSE at wholesale.

CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)

Tin Plate.—

10x14, IC, Ch'l. Good.	$	14x20, IX, Ch'l Best.	$15 50
10x14, IC, " Best.	12 00	14x20, IXX, " "	18 00
10x14 IX, " "	14 50	14x20, IXXX, " "	20 50
12x12, IC, " "	13 50	DC, 100 Plate, " "	12 00
14x12, IX, " "	15 00	DX, " "	14 50
14x20, IC, " "	13 00	DXX, " "	17 00
Roofing IC, Charcoal, Best		DXXX " "	19 50
Roofing IX, Charcoal "			11 50
20x28, IC, Charcoal Roofing, Com			14 00
20x28, IC, " Fair			22 00
20x28, IC, " Best			22 50
20x28, IX, " "			23 00
10x14, IC, Coke Plates			27 50
14x20, IC, "			10 00 @ 10 50
10x20, IC, "			10 50 @ 11 00
			16 50

Block Tin.—

Large Pigs	30c	Bars	32c
Small	31c	Straits, 2c. higher.	

Zinc.—Sheet, 500 to 1000 lb. Casks 10½c
Loose Sheets 10½c
Slab Zinc or Spelter 6¾ to 8c

Copper.—Bottoms 35c
Sheathing 30c
Planished 40c
Boiler lengths 40c
Ingot 24c to 26c
Bolt 40c

Braziers' Sheets.—

30x60, 6 to 10 lbs.	₩ lb 41c	30x60, 15 to 100 lbs.	₩ lb 35c
30x60, 10 & 12 lbs.	" 38c		

Solder.—F. S. & Co.'s make

Best Fine	22c	Roofing	18c
No. 1	20c	Braziers' or Soft. Sold.	32c

Antimony 18c
Rabbit Metal—F. S. & Co.'s 16c
No. 2 14c

Sheet Iron.—

	Common.	Smooth Com.	Smooth Charcoal.	Smooth Juniata.
No. 24	5 c	6 c	7½c	9½c
25 & 26	5½c	6¼c	7¾c	9¾c
27	5½c	6½c	8 c	10 c

Galvanized Iron dis 20 %

No. 18 to 20	12c	No. 27	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—

Perfect	32c	No. 1 Stained	19c
		In Sheets, 1c. higher.	
American Russia,		B	10½c
A	15c	In sheets, 1c higher.	
Lead.—		Lead Pipe, in full coils	8½c
Pig	7½c	Lead Pipe, when cut	8½c
Bar	8½c	Sheet Lead	8½c

Wire—Bright dis 35 %
Coppered dis 30 %

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.)

Augers.—Watrous Ship dis 10 %
L'Hommedieu Ship dis 15 %

Axes.—Forester's Favorite, Bronzed $12 00
Blue Jackets, Blue 11 50
Excelsior, Black 11 00
Chopper's Prize, Bronzed 10 50
Red Cross, Red 10 00
Red Cross, Handled 12 50
Boy's Handled Blue Jackets 12 00

Axe Handles.—Wadleigh's Oak—
A (Extra) $2 50. B (No. 1) $2 00. C (No. 2) $1 50 ₩ doz

Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1 $1 70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 28, No. 1 1 80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1 2 88
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1 3 50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1 3 38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1 3 50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1 per pair, 50c.
Common, 6, No. 1 45c.

Blind Hinges.—Washburn's per hundred set $8 75
Blind Fasts.—Washburn's per hundred set $5 75
Bolts.—Carriage, Phila., "Girard Works" dis 50&10 %
Borax.—Best Refined ₩ lb 14c
Borers.—Angle, Backus' dis 30 %
Boring Machines.—Angle each $4 75
Common, Snell's quality each 3 75
Braces.—Barber's dis 40&5 %
Backus' dis 50 %
Spofford's dis 40 %
Amidon dis 45 %
Brass Faucets.—L. F. & C. dis 25 %
Butts.—Union Drilled Loose Joint dis 60&10 %
" " Wire Fast Joint dis 55 %
" " Acorn Loose Joint dis 60&10 %
Brass Butts dis 30 %
Wrought Table Butts and Back Flaps dis 30&10 %
Wrought Narrow Butts dis 30&10 %
Can Openers—Sprague's dis 50 %
No. 1, Iron Handle $4 00
No. 2, Wood Handle 4 50
Cartridges.—"U. S. Cartridge Co." dis 50&10 %
Chisels.—"Buck Bros.' Shank Goods" add 20 @ 22½ %
Socket add 22½ @ 25 %
Coal Hods dis 35 %
Fancy Japanned, No. 4, 15 in., $8 00; 5, 16 in., $9 00; 6, 17 in., $10 00.
Fancy Galvanized, No. 4, 15 in., $11 50; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Galv'd, No. 4, 15 in., $15 00; 5, 16 in., $16 00; 6, 17 in., $17 00.
Morning Glory, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Morning Glory, Galv'd, No. 4, 15 in., $15 00; No. 5, 16 in., $16 00; No. 6, 17 in., $17 00.
Compasses and Dividers.—Bemis' dis 35 %
P. S. & W dis 25 %
Cordage.—Manila (usual trade dis.) ₩ lb, 15c
American Tarred Hemp Lath Yarn ₩ lb, 10c
Corn Hooks per doz $0 75
Cow Ties dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle $3 70
No. 35, " 3 " No. 6, " Snap 3 90
No. 40, " 3½ " No. 5, " Toggle 4 23
No. 45, " 3½ " No. 5, " Snap 4 40
No. 50, " 4 " No. 4, " Toggle 4 85
No. 55, " 4 " No. 6, " Snap 5 00
No. 60, " 4½ " No. 5, " Toggle 5 60
No. 65, " 4½ " No. 5, " Snap 5 80
Crow Bars.—Iron, Steel Points ₩ lb, 5½c
"Sweet" Steel Bars ₩ lb 11c
Brown's Steel Bars ₩ lb 10c
K. P. & Co. Extra Drill Steel ₩ lb 15c
Dividers.—Cook's Nickel Plated dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light Inside doors, $12 00 dis 25 %
No. 8, " outside " $18 00 dis 25 %
Torrey's $4 00
Emery.—Alden ₩ lb 9½c
Wellington Mills ₩ lb 10c
Files.—Earl Smith & Co.'s English $5 to £ gold
American $5 to £ currency, less 12½ %
Nicholson $5 to £ currency, less 10 %
" Regular Taper dis 12½&5 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62; 4, $1 88; 4½, $2 13; 5, $2 50.
Funnel Irons.—$2 50 2 50 2 50 3 25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3 50 3 75 4 00
5, 5½, 6 inch.
Hammers.—Maydole dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $9 75
" " " " " bell face, No. 1, $11; 1½, $9 75.
Hangers & Rollers.—Novelty dis 30 %
Anti-Friction $1 75 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co. dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling 0, $4 75; 1, $5 25; 2, $5 75
Claw 1, 5 75; 2, 6 25
Lathing 1, $5 50
Axe Pattern 1, $7 00; 2, 7 50
Broad 0, $5 25; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75; 5, $12 75; 6, $14 75.
Hinges.—Strap and T, Stanley Works dis 25&10 %
Plate, Loose and Fast Joint ₩ lb 10c
Wrought Screw Hook ₩ lb 8c
Hoes.—Ely Baich & Co. M., B. & D.'s list, 1874 dis 25 %
Remington, M., B. & D.'s list, 1874 dis 30 %
Lanterns.—Tubular No. 0 $9 50
Guarded, No. 74, (with kerosene oil and candle burners) 6 25
Lead.—Sheet and Pipe 9c—less 10 %
Locks.—P. & F. Corbin new list dis 45&5 %
Nashua dis 45&5 %
Manure Forks.—
Myers & Ervien, M., B. & D.'s list, 1874 dis 25 %
Peck, Clark & Co., " " dis 25 %
Shumway & Co., " " dis 30 %
Mattocks.—K. P. & Co., axe finish, long cutter $13 75
Short cutter 13 80
Meat Cutters.—"Miles's" Challenge dis. 30 %
No. 1, $2 00; 2, $3 00; 3, $4 00.
Metal.—Babbitt, No. 1, 25c; 2, 25c; 3, 16c; 4, 12c ₩ lb
Nails.—10d and larger $3 60
Nail Pullers.—Little Giant—Small per doz., $2 00
Little Giant—Large " 30 00
Padlocks.—Wilcox dis 50&2 %
All Brass, 2½ inch, 2 keys, job lot $9 00
Picks.—K. P. & Co., Polished Points—
5 to 6 per doz $9 00; 6 to 7, $9 50
Pins.—Universal list and Cost all wood—
2 in. ₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Diggers.—
"Partridge," 6 square tine ₩ doz $12 00
Shumway & Co., 6 round tine ₩ doz 9 00
Pulley Blocks.—"Best Boston Make" net
Common Strapped Blocks—

	4	5	6	7 inch.
Single,	75c.	88c.	$1 00	$1 13 each.
Double,	$1 00	1 12	1 25	1 60 "

Inside Iron Strapped Blocks—

	5	6	7	8	9	10 inch.
Single,	$1 00	1 12	1 38	2 00	2 25	1 75 each.
Double,	1 88	2 00	2 62	3 65	4 00	5 00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

	5	6	7	8	9	10 inch.
Single,	$1 25	1 50	1 65	2 50	2 65	3 50 each.
Double,	2 50	3 00	3 38	4 63	5 00	6 50 "

Plated Ware.—Rogers bros. new list dis 40&10 %
Plumb & Levels.—"Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels dis 50 %
No. 2, First Quality Levels dis 60&10 %
No. 3, Iron Pocket " dis 35 %
No. 4, Level and Plumb Glasses dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge dis 50&10 %
No. 6, Improved Iron Bench Planes dis 20&10 %
Pocket Knives.—Conn. Cutlery Co. new net list
American Shear Co. dis 33⅓ %
Rakes.—Cast Steel, garden dis 30 %
Malleable dis 25 %
Rail Barn Door.—For Novelty and Anti-Friction Hangers per foot 7c. dis 30 %
Rivets.—Black dis 25 %
Carriage, oval head, Nos. 5, 4, 3, 2, 1, 0, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16c ₩ lb net
Rubber Moldings.—"Harmon's" dis 10 %
No. 2, for Windows per foot, 5c
No. 3, for Doors per foot, 10c
No. 4, " per foot, 12c
Sad Irons.—Bliss & Drake ₩ lb 4
Sand Paper—0 to 2, $4 25; 2 to 3, $4 75 dis 10 %
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Disston's" dis. 15 %
Disston's dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts per ft., 37c
" " " "Star" X Cuts. " 40c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2 25
Boynton's genuine Lightning X Cut per ft., 60c
" " " One Man X Cut..each, $2 25
Circular—Wheeler, Madden & Clemson's dis. 25 %
Mill— " " dis. 25 %
Screws.—American Screw Co. revised list dis 52½ %
Aiken's dis 50&10 %
Scythe Stones.—
"Willoughby Lake," first quality ₩ gross $6 00
" second quality " $4 00
Shovels.—O. Ames new list dis 12½ %
M. B. & D. new list dis 12½ %
Snow, Malleable Iron Tip, D Handle—Agents for New England $6 50
Snow, Malleable Iron Tip, long Handle—Agents for New England 5 50
Sifters.—Coal, Rice, &c. $12 00
Spading Forks.—M. & E. dis 25 %
Stone Pickers.—"Partridge," original ₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's $6 00 per doz
Traps.—Oneida dis 20 %
Blake's dis 50 %
Vises.—K. P. & Co.'s Solid Box, Blacksmith ₩ lb 18c
Parker's Parallel dis 10 %
Backus dis 25 %
"Howards" Parallel dis 20 %
Wardrobe Hooks.—Wire to drive ₩ gross $1 00
Weather Strips.—"Harmon's" per doz $5, dis 10 %
Weights.—Window Weights ₩ lb 2½c
Wedges—Axe ₩ doz 35c
Wire.—
Eureka, in spools, No. 28 to 40 assorted ₩ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black ₩ ft 6c
Wrenches.—Genuine Wrenches, A. G. Coes dis 40&5 %
Wringers.—
Novelty and Universal } Tub No. 2 } market unsettled
Eureka per doz $60 00
Novelty Bench, No. 4 market unsettled

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₩ box
I. C. Char. 10x14 @ $11 50
I. C. Coke 10x14 9 00
Char. Roof. IC, 14x20, 10 75
Coke " IC, 14x20, 10 25

Pig Tin.—₩ lb
Bancs 31c
Straits 29c
English 24½c

Zinc.—Sheet ₩ lb 11c

Iron.—Sheet Iron, Russia ₩ 17½
Sheet Iron, English " 5 c
" " American Refined " 5½c
" " Galvanized " 10c
Plate Iron " 3½c
Swedish and Norway Bar Iron, gold ₩ ton, $125 00
" " Shapes, gold " 125 00
Norway Nail Rods, first quality, gold " 145 00
" " second " " 135 00
Best Refined Bar Iron " 65 00
The "Burden Best" Iron " 95 00
American Pig Iron, Foundry, No. 1, X " 28 00
" " " No. 2, X " 26 00
" " Gray Forge " 23 00
Scotch Pig Iron ₩ ton 36 50 @ 40 50
Wrought Scrap Iron " 35 00

Steel.—₩ lb

Eng. Tool	18c	German	10c
American Tool	14½c	Spring	7½c
" Mach	10c	Tire	6½c
Bessemer	7½c	Sleigh Shoe	4½c
		Toe Calk	7½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror ₩ doz, $8 50
Hudson's Rotary " 9 00

Axes.—James & Co.'s " 11 50
Pioneer " 12 50
Lippincott's " 12 00
Hunt's " 13 50

Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles, Swelled Taper, Concord and Red Jacket Axles list net
Common Axles, 1¼ inch and upward ₩ lb 7½c
" " less than 1¼ inch " 7¾c

Bellows.—Best St. Louis make 60c ₩ in. dis 15 %

Bells.—Troy, Church, School and Farm Bells ₩ lb 48c

Bolts.—Arms, Bell & Co.'s Carriage and Tire dis 75 %
Arms, Bell & Co.'s Machine dis 20 %

Butts.—Western Butt Co.'s—
Narrow Fast Joint dis 35 %
Broad Fast Joint dis 50 %
" Loose " dis 60 %
Reversible " dis 60&10 %
" Japanned and Silver Tipped dis 50 %
Loose Joint "Acorn" " dis 55 %

Corn Cutters or Hooks.—Solid Steel ₩ doz $4 00

Corn Knives.—Dunn Edge Tool Co.'s Clip " 5 75
Seymour Mfg. Co.'s Solid Steel Back " 5 00

Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers dis 10 %
Hand Shellers Special rates

Cotton Gins.—Dubois Patent dis 10 %

Crow Bars.—Steel Pointed ₩ lb 7c

Drag Saw Machines.—
Culver's Iron Drag Saw dis 10 %
Robinson's Patent Sweepstakes Drag Saw dis 10 %

Fanning Mills.—Nash & Cutt's dis 15

Feed Cutters.—Burdick's National dis 15 %
Baldwin's American dis 15 %
Sanford No. 1, $12 00; No. 2, $8 75 net

Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks dis 33⅓ %
" " Handled Hoes dis 33⅓ %

Grinding Mills.—French Burr Mills net list
Challenge Feed Mills dis 30 %
Sedgebeer's Nonpareil Mills dis 10 %
Osage Corn and Cob Mill dis 20 %

Hammers.—Masons' Hammers ₩ lb 20c
Smiths' Hand 22c

Handles.—No. 1 Fork, Hoe and Rake dis 20 %
No. 2 Fork, Hoe and Rake dis 40 %

Harrow Teeth.—1 inch iron ₩ lb 4½c
⅞ and ¾ inch iron " 4¾c
Barbed or Headed ½c extra

Hay and Cotton Presses.—
Dederick's Railroad dis 5 %
" Perpetual net

Hay Knives.—
Dunn Edge Tool Co.'s ₩ doz $14 50—dis 15 %
Lightning (Weymouth's Patent) ₩ doz $20 00

Horse Hay Fork.—Nellis' Harpoon dis 20 %

Horse Nails.—National Patent Pointed 20c rates
National Patent Polished, extra finished 25c "

Horse Powers.—Pitts or Carey's Patent dis 10 %
Wheeler's Railway dis 10 %
Sandwich Lever dis 10 %

Horse Rasps.—Heller Bros. dis 45 %

Horse Shoes.—
Rhode Island (Perkin's Pattern) ₩ keg, $6 50
" Mule " 7 50
" Trotting Shoes " 9 00

Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks ₩ doz $14 75 @ 15 25
" Grub Hoes, oval eye " 10 75 @ 12 00

Nails.—Wheeling $3 70 rates
Order for 100 kegs 10c per keg less.

Picks.—Klein, Logan & Co.'s Railroad and Clay ₩ doz $10 50 @ 11 75
Klein, Logan & Co.'s Coal " 8 00 @ 9 00
" " Poll " 12 00
" " Stone " 15 00
" " Tamping " 17 50

Plows.—Avery's Cast and Steel dis 15 %
Collins Cast Steel new list net
Pekin Steel new list net

Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32 dis 30 %

Rakes.—Paddock's Premium Sulky $30 00 net
St. Louis Revolving 14 tooth 5 50 net
" " 16 " 6 00 net
" " Hand Hay Rake dis 10 %

Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives dis 20&5 %
" " Sections dis 25 %

Road Scrapers.—Steel dis 25 %
Cast Iron dis 10&2½ %

Sad Irons.—Monitor Brand, Silver Polished ₩ lb 6c

Sash Weights.—Standard Solid Eyes ₩ lb 3½c

Saws.—Hubbard, Lippincott, Bakewell & Co.'s dis 10
Branch, Crooks & Co.'s dis 15

Scythes.—Dunn Edge Tool Co.'s new list dis 25

Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00
Extra Indian Pond " 7 50
Premium " 9 50 } dis 25
Diamond Grit " 18 50

Shovels, Spades and Scoops.—
Lippincott's dis 20 %

Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished ₩ lb, 15c
Solid Cast Steel " 35c

Snaths and Cradles.—Seymour Mfg. Co.'s dis 20 %

Springs.—Cleveland Spring Co.'s—
Carriage and Express dis 10 %
Blue Seat Springs dis 15 %

Thimble Skeins.—Pump & Skein Co.'s dis 60 %

Vises.—Solid Box ₩ lb 16c
Wilson Mfg. Co.'s dis 15 %

Wheelbarrows.—Railroad & Garden new list net

Wrenches.—Coes' Genuine dis 33⅓ %
Coes' Pattern dis 50 %

Wringers. Crown ₩ doz $60 00

Wagons.—Whitewater Farm Wagons—
Thimble Skein No. 3, $30; 3½, $34; 3½, $35
Iron Axle No. 1½, $55; 1⅝, $60; 1¾, $65

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Char	12 00	IX, continuous, 20 in. x 300 ft.	
IX, 10x14, "	14 50	IC, 10x14, best	
IC, 12x12, "	12 50	Coke	$11 00
IX, 12x12, "	15 00	IC, 10x14, good	
IC, 14x20, "	13 00	Coke	10 50
IX, 14x20, "	15 50	IC, 10x20, Tern.	16 00
IC, 14x20, Tern.	11 50	IX, 10x20, "	14 00
IX, 14x20, "	14 00	IC, 14x20, "	11 00
IC, 20x28, "	23 00	IC, 14x20, Coke Lead	8 00
IX 20x28, "	27 00	IC, 10x14, punch'd for Safes	10 00
IC, continuous 20 in. x 200 ft.			

Block Tin.

Large Pigs Straits	30c	Bars	32c
Small " English	31c		

Sheet Zinc.

Casks	₩ lb 10½c	Sheet	₩ lb 11c

Solder.

No. 1, Refined, in bars or plate	17c
No. 2, " " "	16c
Pig Lead	7¼c

Sheet Copper—18 to 100 lbs. Sheets 30x60 32c
14 to 16 lbs., Sheets 30x60 32c
10 to 12 lbs., " and 20x72 35c
6 to 9 lbs., " 38c
Tinned, 14 and 16 oz. 14x48 37c
Planished, 14 and 16 oz. 14x48 37c
" No. 7, 8 and 9 " 39c
Copper Bottoms 40c

Sheet Iron.—

	Com'n.	Sm'th.	Char'l.	Jun'ta.
No. 16 to 20	4¾c	5¾c	7¾c	9¾c
No. 22 to 24	4¾c	5¾c	7¾c	9¾c
No. 26	5 c	6 c	8 c	9¾c
No. 27	5½c	6¼c	8¼c	10c

Galvanized Iron dis 30 %
Iron Rivets dis 25 %
Iron Wire dis 25 %
Coppered Market Wire dis 30 %
Copper Rivets and Burs dis 25 %
Russia Iron.—Nos. 9, 10, 11 and 12, ₩ lb 30c
No. 1 stained, ₩ lb 14c
Imitation Russia, ₩ lb 12c
Retinned Stamped Ware dis 30 %

TO ALL WHO USE STEAM-POWER!

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If, after a fair trial, it does not, we will take it off at our own expense.

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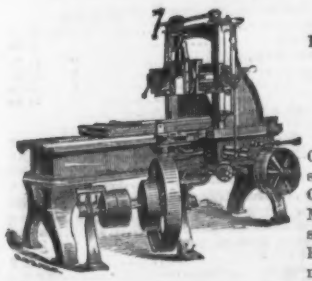

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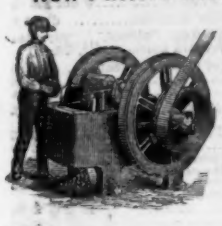

For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

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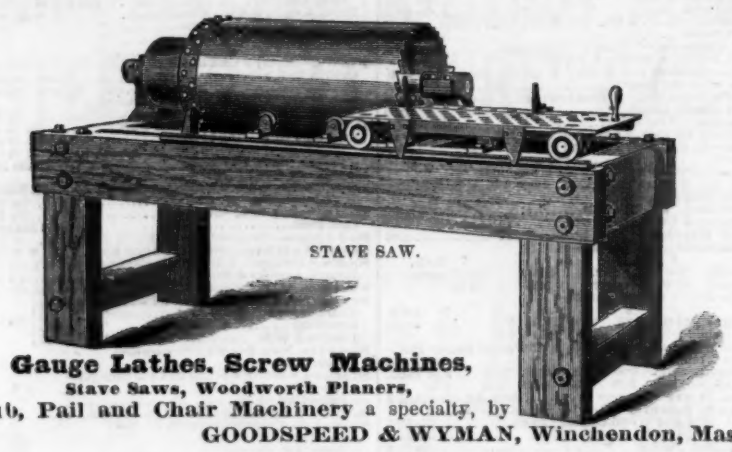

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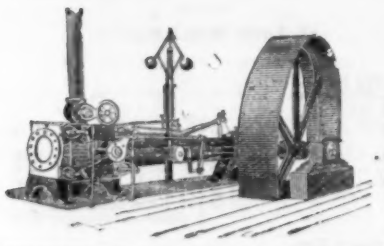

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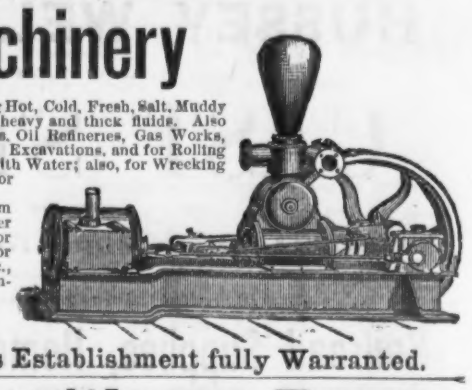

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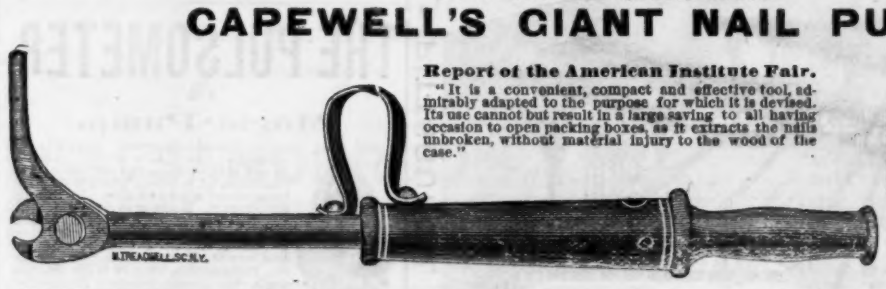

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"It is a convenient, compact and effective tool, admirably adapted to the purpose for which it is devised. Its use cannot but result in a large saving to all having occasion to open packing boxes, as it extracts the nails unbroken, without material injury to the wood of the case."

Reasons why you should Use the Nail Puller.

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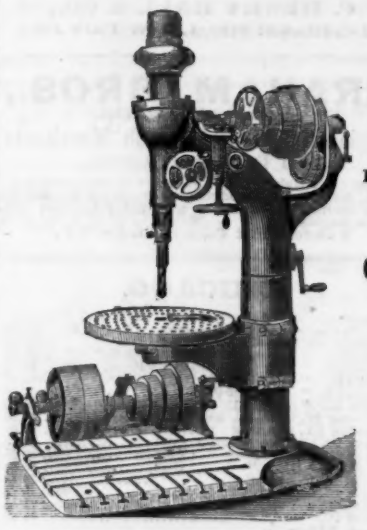

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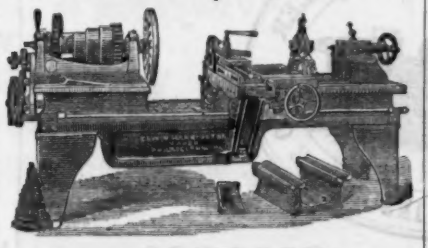

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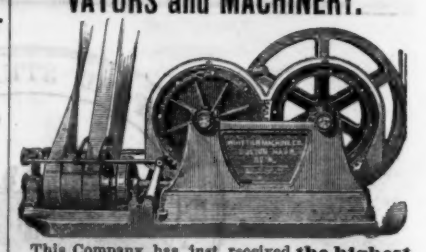

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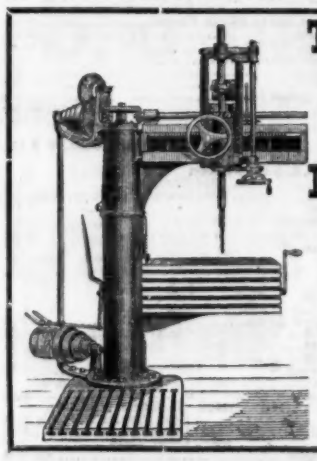

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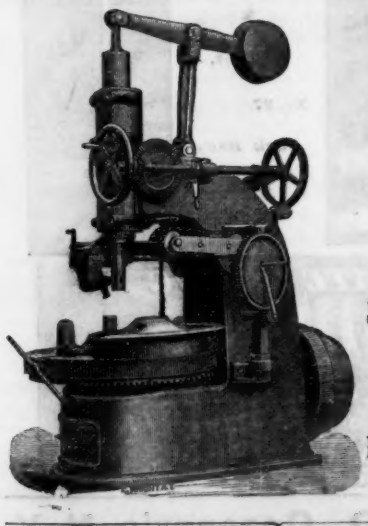

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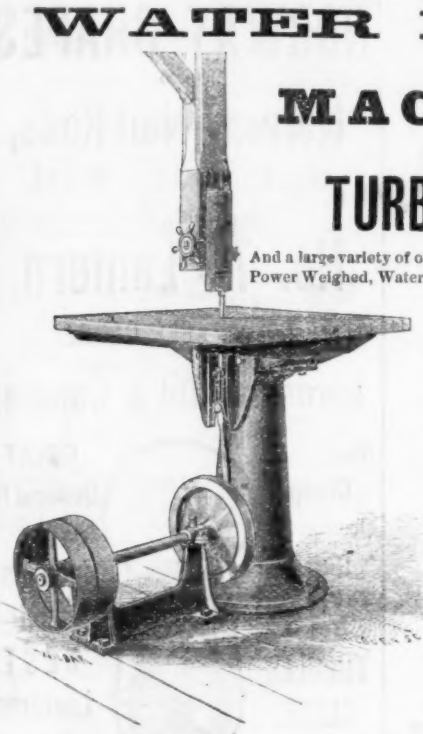

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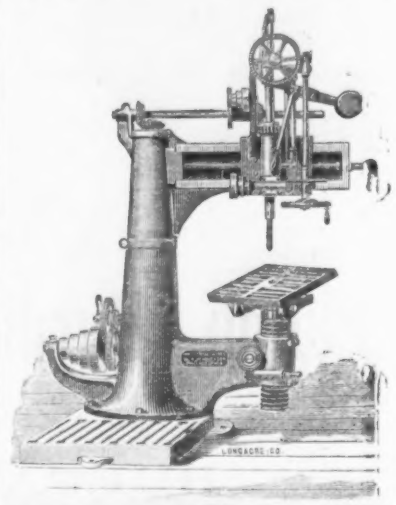

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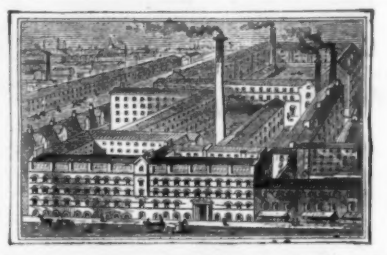

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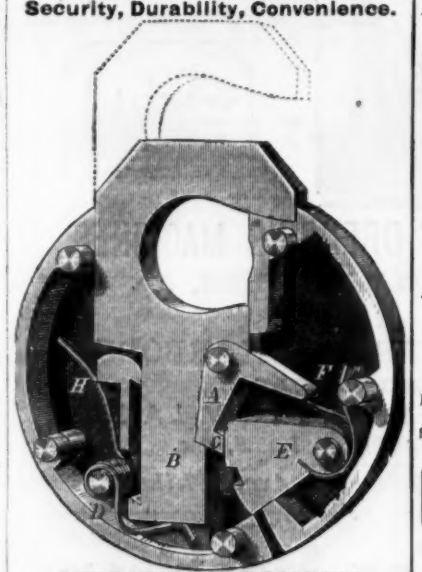

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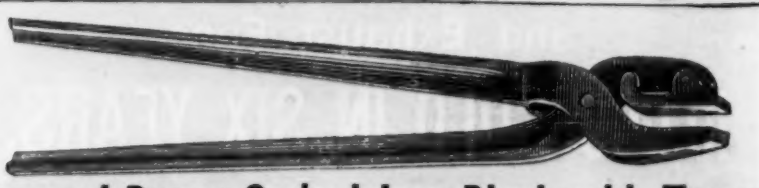

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